

Army Battlefield Distribution Through the Lens of OIF:

Logical Failures and the Way Ahead

**A Monograph
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Abstract

Army Battlefield Distribution Through the Lens of OIF: Logical Failures and the Way Ahead by
MAJ Eric P. Shirley, USA, 73 pages.

This monograph examines the causes of battlefield distribution challenges and failures at the operational level during Operation Iraqi Freedom. The thesis is that following the logistics challenges noted during Operation Desert Storm the Army mistakenly pursued a course of reforms during the 1990s that focused on business efficiencies at the expense of battlefield effectiveness. The reductive hypothesis that velocity management and “Just-in-Time” logistics borrowed from civilian industry would succeed on the battlefield also obviated the need to assign process ownership for doctrinal, technological and materiel development.

Theoretical, doctrinal and historical examples are examined in the thesis beginning with Operation Desert Storm and moving through the initial combat phase of Operation Iraqi Freedom (OIF) to the reforms resultant from the perceived failures of Army Battlefield Distribution in OIF. The analysis of these examples leads to conclusions and recommendations that focus on defining a way ahead for effective Army Battlefield Distribution. The recommendations focus on revising battlefield distribution doctrine, Army battlefield distribution process ownership, distribution C4I system development, and avoiding the root causes of future failures.

The monograph concludes that the Army currently does not have an effective operational concept for battlefield distribution. Given the critical importance of distribution-based logistics to an Army transforming while at war as part of a joint team, the integrity and effectiveness of the Army’s current Battlefield Distribution system must be critically assessed and fixed.

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CHAPTER 1 - PROBLEM BACKGROUND

“Today’s problems come from yesterday’s solutions.”

Peter M. Senge, *The Fifth Discipline*

Introduction

On 30 March 2004, Congressman Joel Hefley gaveled into order a hearing on logistics lessons from Operation Iraqi Freedom and logistics transformation. The Congressman was serving as the Chairman of the House Armed Services Committee (HASC) Subcommittee on Readiness. With senior logisticians from each service and the joint community appearing as witnesses at the hearing, Congressman Hefley had two goals in mind. First, to determine why after nearly ten years of logistics transformation efforts, regional Combatant Commanders still did not have effective total asset visibility to support logistic sustainment operations in times of war. Second, he wanted to hear proposed solutions by the services for the way ahead. The Chairman closed his opening remarks by stating that, “I know logistics is hard, but I am not prepared to provide the Department with billions of operations and maintenance funds on systems, processes or ideas that do not move the Department forward.”¹ The cause of this hearing was manifold, but it was in no small part a result of the significant operational and tactical distribution problems faced by the United States Army during the initial combat phase of Operation Iraqi Freedom.

The initial combat phase of Operation Iraqi Freedom (OIF) was marked by significant logistical challenges that generally revolved around distribution system shortcomings at the operational and tactical levels.² These shortcomings were exceptionally perplexing not only because of the risk they posed to the operation and the forces involved, but also because similar

¹ Congress, House of Representatives, House Armed Services Committee, Subcommittee on Readiness, *Iraqi Freedom Lessons*, 108th Cong., 30 March 2004, 2.

² Gregory Fontenot, E.J. Deegen, and David Tohn, *On Point, The United States Army in Operation Iraqi Freedom* (Fort Leavenworth: Combat Studies Institute Press, 2004), and GAO Report # 04-305R *Defense Logistics: Preliminary Observations on the Effectiveness of Logistics Activities During Operation Iraqi Freedom* dated 13 December 2003 both support this assertion.

problems were identified following Operation Desert Storm, after which Army logisticians spent over a decade in an attempt to realize a Revolution in Military Logistics (RML). This Army RML posited as one of its central assumptions, transition from a supply based to a distribution based logistics systems. This system, enabled by technological enhancements, was supposed to provide Total Asset Visibility (TAV) on the battlefield and facilitate a much more efficient sustainment process embodied in the operating concept termed Battlefield Distribution. The apparent systemic failure of the Army's battlefield distribution processes during the initial combat phase of OIF is significant because there is a generally held institutional belief that without an RML there cannot be an overarching Revolution in Military Affairs (RMA).³ The lack of a viable distribution based logistics system threatens Army transformation efforts and the successful prosecution of the open ended Global War on Terror.

This monograph proposes the following thesis: ***The Army currently does not have an effective battlefield distribution operational concept because of misguided, unstructured and under resourced reform efforts in the wake of Operation Desert Storm.*** Given the critical importance of distribution-based logistics to an Army at war and transforming, the integrity and effectiveness of the Army's current Battlefield Distribution operating concept will be examined. This examination is carried out in light of the perceived failures of operational and tactical distribution functions in Operation Iraqi Freedom. Throughout the monograph, elements of Army and joint doctrine, military history, business and scientific theory will be used to validate and/or challenge institutional decisions made regarding the development and attempted application of the Battlefield Distribution concept. The background of the Army's logistics transformation efforts following Operation Desert Storm will be reviewed as the point of origin for the current Battlefield Distribution concept. Causes of the failures in the Army's Battlefield Distribution operating concept and the significance of these causes in determining a successful way ahead for

³ Daniel G. Brown, "Revolution in Military Logistics at the Operational and Tactical Level." *The Army Chaplaincy* (Summer-Fall 1999).

the Army's Future Force will then be reviewed. A detailed look at Battlefield Distribution challenges, successes and failures during the initial combat phase of Operation Iraqi Freedom (OIF) will then be addressed. The current state of doctrine and technology that underpins the Battlefield Distribution concept will then be reviewed. Finally, the monograph will present conclusions and provide recommendations for the way ahead in terms of doctrine, materiel, technology, Army process ownership, professional military education and emerging concepts.

This chapter will begin by providing key definitions critical to the understanding of the monograph. A brief historical review of the importance of logistics to warfighters is presented and expanded to include the distribution requirements of the contemporary operating environment. Next, the milestones accompanying the Army's institutional development of the Battlefield Distribution operating concept will be discussed as it evolved following Operation Desert Shield / Desert Storm through the 1990's. This background will indicate the nesting of the Army's logistics transformation efforts within the Army and joint communities' overarching transformation efforts. The original vision of the Army's Battlefield Distribution concept as contained in TRADOC Pamphlet 525-77 is examined along with key goals, assumptions, and desired results.

Key Terms and Definitions

Battlefield Distribution: a holistic concept of information exchanges, management procedures, functional organizational designs, and reengineered operational processes which enable U.S. forces to properly request, receive, redirect, track, distribute, control, and retrograde materiel, services, units, and personnel within a single distribution system.⁴

⁴ Headquarters, Training and Doctrine Command, TRADOC Pamphlet 525-77 *Battlefield Distribution* (Fort Monroe: U.S. GPO, 1998), 4-5.

Hub and Spoke Distribution System: a distribution method using a distribution terminal (hub) which receives shipments from outlying activities and reconfigures / redirects these shipments over designated routes (spokes) to specified supply activities (satellites).⁵

Total Asset Visibility (TAV): The capability for both operational and logistics managers to obtain and act on the location, quantity, condition, movement, and status of assets throughout the DoD's logistic system. TAV includes all levels and all secondary items, both consumable and reparable.⁶

Focused Logistics: Providing the joint war fighter with the right personnel, equipment, supplies, and support in the right place, at the right time, in the right quantities across the full spectrum of military operations.⁷

Operational Sense and Respond Logistics: Transformational network-centric concept that enables joint, effects-based operations and provides precise, agile support with cross-service, cross-organizational capabilities. Within sense and respond logistics every entity whether military, government, or commercial is both a potential consumer and a potential provider of logistics.⁸

Historical Context of Logistics and Distribution Management Transformation

The critical role of logistics in military campaigns is well documented throughout history. The U.S. military has experienced both the force multiplying benefits of well-resourced and redundant supply-based logistics systems (post- mobilization WWII and Operation Desert Shield / Desert Storm) and suffered from a dearth of supplies in critical instances (pre-mobilization WWI and WWII and initial force projection into Korea in 1950). Generally, the logistic system

⁵ Ibid., 23.

⁶ Headquarters, Department of the Army, FM 100-10-1 *Theater Distribution* (Washington, D.C.: GPO, 1999), Glossary-12.

⁷ G.S. Holder, *Focused Logistics Campaign Plan* (Washington, D.C.: GPO, 2002), 6.

⁸ Office of the Secretary of Defense, Office of Force Transformation, *Operational Sense and Respond Logistics: Co-evolution of an Adaptive Enterprise Capability, Concept Document (Short Version)* (Washington D.C.: GPO, 2004), 5.

of the U.S. Army has improved throughout the 20th and early 21st centuries while always maximizing the overwhelming industrial advantage of the United States' economy. As we face the challenges of the contemporary operating environment, the U.S. military enjoys a conventional logistical over-match in comparison to every conceivable enemy. However, this quantitative advantage is not enough. As the Army transforms itself into the Future Force (while at war) the critical requirement for joint, expeditionary, sustained full spectrum operation demands an ever more precise, agile and responsive logistic system. Such a logistic system will be distribution-based. To realize a distribution based logistics system, the U.S. Army will have to change the way it has historically executed logistic sustainment operations as a service and as a member of the joint war fighting team.

Field Manual #1, The Army, requires that "Army forces must be sustainable across the spectrum of conflict. Sustainability requirements reflect the continuous, uninterrupted provision of combat service support to Army forces. Sustainability in a full spectrum Army will require a combat service support reach capability that allows commanders to reduce stockpiles in theater while relying on technology to provide sustained velocity management and real-time tracking of supplies and equipment."⁹ Indeed, the TRADOC Future Force white paper outlines the traits of increased deployability, increased throughput at ports, and immediate commencement of operations with reduced operational pauses. The current doctrine and future concepts presuppose "... projected reductions in sustainment requirements and reliance on strategic to tactical **battlefield distribution** will reduce the heavy logistical infrastructures that hampered past operations and constrained responsiveness".¹⁰

The Army does, and will increasingly in the future, fight as a part of a joint war fighting team conducting sustained full spectrum operations in support of regional combatant

⁹ Headquarters, Department of the Army, *Field Manual #1, The Army* (Fort Belvoir: U.S. GPO, 2001), 35.

¹⁰ Headquarters, U.S. Army Training and Doctrine Command, *Future Force White Paper* (Fort Belvoir: U.S. GPO, 2003), 4.

commanders. The *Joint Vision 2010* first identified focused logistics as one of four primary tenets for joint operations. The Joint Staff J4's Focused Logistics Campaign Plan asserts that the current U.S. logistic system "Lacks the flexibility, agility, mobility, efficiency, and interoperability necessary for supporting Joint Vision operations."¹¹ To begin to resolve these deficiencies, the Joint Staff will adhere to a Future Logistics Enterprise (FLE) mid-term vision (2005-2010) that employs as one of six initiatives, end-to-end distribution. This initiative will streamline components of sustainment from point of origin to point of end-use. The desired end-state for this initiative is "... an integrated, synchronized, end-to-end distribution system to meet war fighter requirements for [logistic] information and materiel."¹² This evolving, overarching doctrine indicates the Army's plans are progressing in tandem with the larger joint community.

In order to frame a description of what the Army's distribution based logistic transformation is pursuing, it is necessary to compare and contrast a supply-based sustainment system vis-à-vis a distribution-based logistic system. A supply-based system can be characterized as the "iron mountain" approach to sustainment. This is a system in which increasingly large, static piles of materiel are stocked at each echelon behind the forward maneuver formations. The logistic mass of this system reduces operational risk, but it also burdens the theater commander with an unnecessarily large logistic footprint and wastes precious lift resources both during deployment and redeployment. Such a system is inherently not agile, precise or responsive. The distribution-based logistic system on the other hand is an operational concept responsive to the war-fighting commander by emphasizing distribution velocity and precision, supported by advanced communications, digital information, and decision support tools.¹³ These tools ideally provide distribution managers with near-real time logistical situation awareness and assist in sustainment decision-making and execution monitoring.

¹¹ Holder, G. S., *Focused Logistics Campaign Plan*, 11.

¹² Ibid., 14.

¹³ Robert McKay, "Transformation in Army Logistics." *Military Review* (September-October 2000): 44-46.

Operation Desert Shield / Desert Storm Lessons Learned?

Saddam Hussein's invasion of Kuwait in 1990 tested the U.S. Army's ability to rapidly project combat power and sustain large-scale joint operations. Although the ninety-six hour ground combat phase was viewed as a one-sided victory for U.S. and coalition forces, significant inefficiencies in asset visibility and distribution management were recognized by the Army, the Department of Defense and the Congress.¹⁴ These inefficiencies would serve as the basis for logistics reform between Operation Desert Storm and Operation Iraqi Freedom. The incompetence of the foe and the brevity of the ground fight allowed post-conflict analysis to focus myopically on the mass quantities involved and inefficiencies of the extant supply system.

In the account of Operation Desert Shield / Desert Storm *The General's War*, authors Gordon and Trainor seem to foreshadow many of the logistics lessons that would be revisited after Operation Iraqi Freedom. The CENTCOM Commander, General Schwarzkopf, saw logistics as one of his main operational challenges. Logisticians and the systems that support them are described as second-class citizens in the DoD caste system. Pentagon procurement is described as "...a bachelor who owned a Porsche but forgot to pay the electric bill."¹⁵ In another past as prologue observation of logistics materiel structure, the authors stated that, "The Army's communications were distressingly fragile for fast paced armor operations."¹⁶ This comment was repeated nearly verbatim in post-OIF AARs. The authors went on to caution that declining military budgets for mundane, unglamorous areas of peacetime force structure are often found to be vital in war.¹⁷

In *Certain Victory*, General Robert Scales chronicles some of the distribution challenges encountered in Operation Desert Shield / Desert Storm. Some of these challenges were the

¹⁴ See William "Gus" Pagonis' *Moving Mountains*, and GAO/NSIAD Report #92-90 *Transportation and Distribution of Equipment and Supplies in Southwest Asia*.

¹⁵ Michael Gordon and Bernard Trainor, *The General's War* (Boston: Little, Brown and Company, 1995), 57.

¹⁶ Ibid., 475.

¹⁷ Ibid., 476.

results of doctrine and force structure, and others were self-imposed by the combatant commander. The Gulf War highlighted the Army's institutional focus on the defense of Europe.¹⁸ This is demonstrated both in terms of limited long haul tactical transportation assets and the relative dearth of port opening infrastructure in the active Army. Operational planners were tethered to ports and log bases that became inextricably linked with the notion of "Iron Mountains" indicative of a supply based sustainment system. On closer examination we can see that some of the logistics mass associated with ODS was the direct result of guidance given by operational commanders.

General Schwarzkopf was determined to keep the logistics overhead low for the campaign. He wanted to avoid the creation of huge rear area log bases like the ones at Long Binh and Qui Nhon that he remembered from Viet Nam.¹⁹ As the crisis deployment unfolded following Saddam's 2 Aug 1990 invasion, combat troops were deliberately sequenced ahead of support troops in the force flow to Saudi Arabia. By the end of September some 17,450 tracked and wheeled vehicles, 450 aircraft and 1,521 sea land containers had been discharged at air and sea ports. Cargo documentation detachments were not among the early deploying forces. As a result, port congestion and poor asset visibility stymied preparations for operational sustainment.²⁰ The command decision to have 60 days supply of munitions on-hand resulted in the shipment of over 350,000 tons of munitions.²¹ The inefficiency of the operational logistics distribution system thus resulted from force structure / mission mismatches, command guidance, and lack of a doctrinal organization solely responsible for the distribution process. As Chapter 3 will demonstrate, similar problems with sequencing of logistical assets resurfaced during Operation Iraqi Freedom.

¹⁸ Robert Scales, *Certain Victory: The US Army in the Gulf War* (Fort Leavenworth: U.S. Army Command and General Staff College Press, 1994), 124.

¹⁹ Ibid., 58.

²⁰ Ibid., 75.

²¹ Ibid., 81.

LTG General Gus Pagonis was selected to be the single operational logistics commander during ODS initially because of his transportation expertise and experience with numerous strategic Return Forces to Germany (REFORGER) exercises. The sustainment challenges resulting from the provisional, ad-hoc nature of LTG Pagonis' 22d Support Command (SUPCOM) attest to the fact that a force projection, distribution focused operational headquarters would be required for future Army operations. Writing in the aftermath of these large scale operations, LTG Pagonis stated in his book *Moving Mountains* that, "We in the military must sacrifice some measure of efficiency to maintain a higher margin of safety."²² This insight is seconded by military theorist and historian Martin van Creveld who wrote, "If the logistic system in question is not to be hopelessly fragile and liable to catastrophic breakdown...a certain amount of redundancy, slack, and waste must not only be tolerated but deliberately built in."²³ This awareness stood in contrast to both General Schwarzkopf's estimate of the situation at the time and future senior leaders in the run-up to OIF.

The insight about some need for redundancy and "slack" would also elude future senior leaders as they considered reduction in logistics force structure and material investment in logistics C4I systems and technological enablers. These observations also would not be given proper consideration by the business practices reformers that attempted to present "Just-in-Time logistics" and Velocity Management as comprehensive battlefield distribution solutions throughout the 1990s.

Milestones Leading to the Battlefield Distribution Concept

The Army's recent logistics transformation efforts can be traced directly to the observations noted from the first Gulf War. Following Operation Desert Shield / Desert Storm, the Army's leadership charted a course for a revolution in military affairs (RMA) that would

²² William Pagonis, *Moving Mountains* (Boston: Harvard Business School Press, 1992), 210.

²³ Martin van Creveld, *Technology and War* (New York: Free Press, 1989), 316-317.

radically improve the war fighting capabilities of the service and increase our value as part of the joint war fighting team. This RMA necessarily would require a supporting revolution in military logistics (RML). The RML was to “. . . transform Army logistics into a distribution-based system that substitutes logistics velocity for logistics mass to provide the right stuff, at the right place, at the right time and at the best value.”²⁴ Contemporary events also drove the need for a more efficient logistic system.

Following the Gulf War in 1991, the Army returned to a planned cycle of downsizing. The civilian administration, Congress, and the American people also sought to enjoy the “peace-dividend” and spend taxpayer dollars in areas other than defense. The fiscally constrained 1990s would require a more efficient system of sustaining Army forces both in garrison and in the field. With the collapse of the Soviet Union, the U.S. military also faced a period of uncertainty. In order to support the national military strategy the Army would have to undertake a more expeditionary role to project forces into austere environments to protect national interests. Julian Thompson, author of *Logistics: The Lifeblood of War*, writing at the end of Operation Desert Storm commented of the times that only those forces capable of sustaining operations at the end of long lines of communication would be relevant in deterring threats on this new international scene.²⁵

The first steps on this road to a revolution in military logistics occurred when the Army’s Deputy Chief of Staff for Logistics initiated the Total Distribution Plan (TDP). This program was the Army G4’s plan to respond to the Vice Chief of Staff of the Army’s request for a program that would correct the logistic deficiencies identified following Operation Desert Shield / Desert Storm. The program commenced in 1992, and functional oversight was given to the Combined Arms Service and Support Command (CASCOM) at Fort Lee, Virginia. The CASCOM Combat

²⁴ Mark J. O’Konski, “Revolution in Military Logistics: An Overview.” *Army Logistician* 32 (January-February, 1999): 10-14.

²⁵ Julian Thompson, *The Lifeblood of War: Logistics in Armed Conflict* (Washington: Brassey’s, 1991), 344.

Service Support (CSS) Battle Lab began the process of redefining in a fundamental way the service's view of executing logistical sustainment.²⁶

In 1997, the TDP General Officer Steering Committee directed a new focus for the TDP that was to merge the operational concept into the Joint Theater Distribution plan. The outcome was Total Distribution Action Plan (TDAP II). TDAP II incorporated lessons learned from the Army Science Board, observations from the Army After Next (AAN) studies group, and Army Training and Doctrine Command (TRADOC) war game AARs. This refocusing also broadened the plan to encompass joint doctrine in recognition that Army battlefield distribution, in theater, dealt with other defense agencies. The TDAP II became the action plan to create the Army's Distribution-Based Logistics System (DBLS) and stood at the heart of the RML.²⁷

Army Battlefield Distribution – The Vision

The Headquarters of U.S. Army Training and Doctrine Command (TRADOC) defined a broad, overall vision and several discrete components of battlefield distribution (BD) in a February 1998 concept document, *TRADOC Pamphlet 525-77, Battlefield Distribution*. This pamphlet defines battlefield distribution, provides a general operating concept overview, outlines key assumptions, fundamentals and characteristics of the nascent battlefield distribution doctrine.

Generally, battlefield distribution capitalizes on modular designs, capabilities-based force tailoring and technology enhancements. Battlefield distribution will, as a general rule, employ the hub and spoke distribution system proven efficient in peacetime European theater-level logistic support. Benchmarking of commercial business practices are conducted to the extent practicable. One of the ambitious requirements set forth in the battlefield distribution vision is seamless connectivity between strategic and operational agencies / activities.²⁸ In chapter 3 the

²⁶ Robert McKay, "Transformation in Army Logistics." *Military Review* (September-October 2000): 49.

²⁷ Ibid.

²⁸ Headquarters, Training and Doctrine Command, *TRADOC Pamphlet 525-77, Battlefield Distribution* (Fort Monroe: U.S. GPO, 1998), 3.

need for an additional ad hoc agency (the CENTCOM Deployment and Distribution Operations Cell - CDDOC) to provide just this function will demonstrate one of the measures by which the Army's battlefield distribution concept failed during OIF.

The first assumption made for executing a battlefield distribution system is that it will operate in all areas of the world throughout the full spectrum of operations. This broad assumption points out one of the key threats to the viability of the concept. Depending on the intensity of conflict, the length of logistic LOCs, and the relative fragility of the supporting C4I systems, interruption of information is the most serious threat to BD. Additionally, as a result of decreased active duty CSS force structure and an increased reliance on civilian contractors, reserve component logistic units in both the Army Reserve (USAR) and Army National Guard (ARNG) will necessarily be called on frequently well into the future. The final critical assumption is that the Army will continue to invest in and leverage technology to enhance communications and information flow.²⁹

The fundamental enabling condition for executing battlefield distribution is an integrated architecture of standard Army management information systems (STAMIS). This system and assorted technological enablers includes state-of-the-art voice and data communication systems, automatic identification technology, and automated source data input. With the enabling STAMIS fielded, the functions of materiel manager and transportation manager are then merged at each echelon from theater to brigade level support unit. This single manager at each echelon, empowered with seamless, near real-time awareness of the logistical common operating picture (LCOP) and tactical situational understanding can streamline logistical processes in support of the operational commander. Streamlined materiel management information processing and total asset visibility (TAV) of all stocks on hand and in-transit allows the distribution manager at each

²⁹ Ibid.

echelon to satisfy customer demands at a much higher level without increasing commitment of strategic lift.³⁰

The main characteristic of battlefield distribution is the merging of materiel and movement manager functions. Also characteristic of battlefield distribution is the employment of the hub and spoke distribution architecture. The battlefield distribution concept requires the employment of tailored, capabilities-based logistic packages. An example of such a package is the Theater Force Opening Package, which is required to open ports and conduct initial RSOI activities. Increased throughput is possible under the BD concept through enhanced TAV/in-transit visibility (ITV), and unitized packaging of materiel at strategic supply activities. This should allow some throughput of goods directly from ports of debarkation to end-users. The fundamentally improved characteristic of battlefield distribution versus traditional supply-based logistics is improved information flows. This improved information flow provides the distribution manager near real-time asset visibility that will enable him to rapidly locate assets (materiel and transportation) and direct materiel release orders (MRO) for rapid delivery to end-users.³¹ This rapid delivery of goods to the warfighter fulfills the two main goals of BD: 1) improved combat capability and 2) improved customer confidence. As we will see, during the initial combat phase of Operation Iraqi Freedom the Army's battlefield distribution system was challenged to accomplish the former goal and failed miserably on the latter.

Scope and Limitations

This monograph will focus on operational level sustainment and tactical distribution shortcomings that were the result of poorly designed and resourced doctrine, technology, and CSS organizations in the wake of ODS. The theater strategic distribution system will not be

³⁰ Ibid., 5.

³¹ Ibid., 7.

addressed. The focus of the monograph is on the Army's Battlefield Distribution operating concept that governs distribution management from the A/SPODs forward to the warfighter.

CHAPTER 2 - THE ROOTS OF FAILURE

*“Our theories determine what we measure.”
-Einstein*

The Army’s efforts to transform to a distribution-based from a supply-based logistics system during the period between Operation Desert Storm and Operation Iraqi Freedom suffered from several fundamental flaws. These flaws will be examined in this chapter with an eye toward demonstrating a causal relationship linked directly and indirectly to the logistics challenges and failures experienced during Operation Iraqi Freedom. The flaws will be highlighted in five specific areas. 1) The unbalanced post-ODS dialogue about efficiency versus effectiveness. 2) The validity of battlefield distribution as a future operating concept. 3) The lack of empirical challenge to the defense intellectual community’s business efficiencies based approach. 4) The lack of systems-thinking and integrity of institutional response to the problem, and 5) Lack of battlefield distribution process ownership in the Army.

Efficiency vs. Effectiveness

Perhaps the main error made by the Army in pursuing the transformation to a distribution based logistics system was due to improperly identifying the problem post-Desert Storm and subsequently treating symptoms of the problem rather than the problem itself. The Army’s RML efforts in the 1990’s sought to craft a more efficient system based on the best business practices from the commercial sector and the defense intellectual community (of which the Rand corporation was a primary contributor).³² This goal of seeking efficiency as a silver bullet cure-all was amplified by the concurrent pressures to downsize the military (including CSS force structure), reduce investment in materiel (specifically CL IX repair parts), and the temptation to emulate the business world’s improvements made in inventory and production management,

³² Five RAND studies on Velocity Management / Accelerated Logistics during the period December 1994 through May 2001 will be referenced.

specifically the velocity management component associated with “Just in Time” logistics.³³ The pursuit of efficiency would proceed apace throughout the 1990s without adequate regard for examining the battlefield effectiveness of such a business-oriented model.

Clausewitz wrote in Book Two, Chapter One of *On War*, “To sum up: we clearly see that the activities characteristic of war may be split into two main categories: those *that are merely preparations for war*, and *war proper*. The same distinction must be made in theory as well”.³⁴ We may use this observation to help us recognize that the efficiencies realized in peacetime garrison operations, although proper and necessary to ensure our good stewardship of the nation’s resources, do not necessarily equate to an effective battlefield solution.

A series of Rand studies in the 1990s laid the intellectual foundation to pursue the Velocity Management solution. These studies would subsequently “prove” improvements to the Army’s logistics distribution system. Actually, the studies demonstrated increased efficiency based on stable garrison environments, which was exactly the result sought. Unfortunately this efficiency was not synonymous with an implementable, effective solution on the battlefield. Rand’s context-free analysis did not consider (nor was it commissioned to) the radically different environment of the battlefield.

The December 1994 Rand Study *Velocity Management: An Approach for Improving the Responsiveness and Efficiency of Army Logistics Processes* marks the initial intellectual basis for the Army’s 1990’s Revolution in Military Logistics (RML). The study was presented to the Army Deputy Chief of Staff for Logistics (Army G4). The study sought to propose a method for dramatically improving the speed and accuracy of logistics processes, thus reducing the need for

³³ John Dumond, *Velocity Management: An Approach for Improving the Responsiveness and Efficiency of Army Logistics Processes* (Santa Monica: RAND, 1994). MDA903-91-C-0006.

³⁴ Carl von Clausewitz, *On War*, trans. and eds. Michael Howard and Peter Paret (New York: Knopf, 1993), 151.

logistics resources.³⁵ The goal of the study was to initiate wide-ranging business process reform in the Army.

In May 1997 Rand issued a report titled *Materiel Distribution: Improving Support to Army Operations in Peace and War*. Commissioned by the Army G4 and CASCOM CG, the report identifies the Army's system of materiel distribution as complex, segmented and disjointed.³⁶ All of the recommendations for improving the complex distribution system dealt with improving business metric performance and cutting costs of CSS infrastructure and materiel costs.

The July 2000 Rand report *Accelerated Logistics: Streamlining the Army's Supply Chain* was authored by Dr. Mark Y.D. Yang. The study recounts the Army's implementation of Velocity Management in 1995 and the subsequent improvements realized in the following four years. The author reports that the Army cut order ship time (OST) overall by 67% and at some installations by as much as 75%.³⁷ The large percentage improvements are significant indicators that the system was improving, but unfortunately no attempt is made to extrapolate this percentage improvement into a quantifiable or qualitative improvement in battlefield distribution effectiveness. In fact a concluding paragraph in the report claims that the "dramatic" improvement in OST leads to quick, dependable and accurate delivery of repair parts "globally".³⁸ An accompanying chart depicts the ultimate benefits of the VM process as improved mission readiness, improved deployability, and saved \$\$.³⁹

Rand published a May 2001 study titled *How is the DoD Logistics Transformation Going?* This study was done as a preparatory assessment for the incoming Bush Administration's

³⁵ John Dumond, *Velocity Management: An Approach for Improving the Responsiveness and Efficiency of Army Logistics Processes* (Santa Monica: RAND, 1994). MDA903-91-C-0006.

³⁶ Nancy Moore, *Materiel Distribution: Improving Support to Army Operations in Peace and War* (Santa Monica: RAND, 1997), 40. MR-642-A.

³⁷ Mark Y.D. Yang, *Accelerated Logistics: Streamlining the Army's Supply Chain* (Santa Monica: RAND, 2000), 29. MR-1140-A.

³⁸ Ibid., 45.

³⁹ Ibid.

transformation-minded DoD leadership. The author, Rick Eden, essentially found that, “Reductions in cost have outpaced improvements in responsiveness, which in turn have outpaced improvements in agility.”⁴⁰ His recommendations included reduced focus on cost savings, improving supply chains from the customer’s (warfighter’s) perspective, more emphasis on forward-leaning support infrastructure, and de-emphasis of buying-out problems with technology.⁴¹ These findings should have raised a cautionary flag about the potential unwanted long-term results of the business efficiency oriented solution set we had been pursuing since the early 1990s.

The Army’s decision to pursue business practice efficiencies and focus on Order Ship Time (both for Customer Wait Time (CWT) and Requisition wait time (RWT)) as a singular measure of “effectiveness” in the 1990’s can perhaps be explained in the terms of “*economical thought*” offered by Dietrich Dorner in his book *The Logic of Failure*. In this book Dorner examines the roots of policy and strategic thinking failures based on individual and group cognitive processes.⁴² Dorner identifies the notion of “*reductive hypothesis*”, or looking at a complex system and reducing all outcomes as being dependent on a single variable (in this case, OST). He goes on to discuss “*methodism*” as seeing new situations in terms of established patterns with existing solution sets (adoption of Velocity Management based upon JIT principles). The Army accurately identified a way to make the systems in use more efficient on the model of industry, unfortunately a more efficient system served only to treat a symptom of the underlying problems, namely the lack of an effective doctrine of battlefield distribution and institutional battlefield distribution process ownership. However, pursuit of dollar saving efficiencies was exactly the kind of easy wrong to pursue during the draw down years of the 1990s when spending the peace dividend trumped effectively preparing for the next major war.

⁴⁰ Rick Eden, *How is the DoD Logistics Transformation Coming?* (Santa Monica: RAND, 2001), DRU-2505-RC.

⁴¹ Ibid., 11-13.

⁴² Dietrich Dorner, *The Logic of Failure: Why Things Go Wrong and What We Can Do to Make Them Right* (New York: Metropolitan Books, 1997), 186-189.

The Army's leadership allowed the perpetuation of a vicious circle of pursuing urgent efficiencies and dollar savings without placing sufficient emphasis and continuous scrutiny on the important pursuit of an effective battlefield distribution methodology. Peter Senge in his seminal book on learning organizations *The Fifth Discipline: The Art & Practice of the Learning Organization* listed the following as the first law of systems thinking, "Today's problems come from yesterday's solutions."⁴³ This tension between focusing on urgent short-term treatment of symptoms versus the important work of long-term underlying problem resolution is addressed well in Dietrich Dorner's *The Logic of Failure*.⁴⁴ The deleterious results of our misplaced efforts in the decade following Desert Storm would become evident in Operation Iraqi Freedom where LTG Christianson (Army Deputy Chief of Staff for Logistics) would conclude, "As a result, Soldiers are at the end of a long line of communication with reduced inventories and an old distribution system."⁴⁵

Conceptual Validity

John F. Schmitt's *Practical Guide to Development and Writing Military Concepts* can help us to assess the status of current battlefield distribution doctrine and also evaluate future proposals for emerging concepts. Schmitt proposes that description of a desired objective does not constitute a concept.⁴⁶ The defense intellectual community and the Army's senior leaders continued to recognize the importance of achieving a Revolution in Military Logistics (RML) throughout the 1990s. However, the process was anything but revolutionary. In fact, the evolutionary pace continued to churn without implementation of any definitive solutions.

⁴³ Peter M. Senge, *The Fifth Discipline: The Art & Practice of the Learning Organization* (New York: Currency Doubleday Press, 1990), 57.

⁴⁴ Doerner, *The Logic of Failure*, 56.

⁴⁵ Claude V. Christianson, "Delivering Materiel Readiness," *Quartermaster Professional Bulletin* (Jan-Feb 2004), 3.

⁴⁶ John F. Schmitt, *A Practical Guide to Development and Writing Military Concepts* (McLean: Defense Adaptive Red Team, 2002), 3. SAIC Working Paper #02-4.

Once the Army accepted as an institution to pursue efficient business practices (which is asserted here was treatment of the symptom, not the actual problem) it settled on a reductive hypothesis. This search for a silver bullet manifested itself in choosing the paradigm of Velocity Management with the metric of OST as the main indicator of “effectiveness”. The book *Moneyball* by Michael Lewis provides an interesting and relevant exploration of the importance of choosing the right metrics in pursuit of organizational goals. Lewis also lays out three notions he terms “irrationality laws”. These irrationality laws are 1) We generalize wildly from our own experiences. 2) We are overly influenced by our most recent performance, and 3) We are biased toward what we have personally seen.⁴⁷ Each of these “laws” can be seen in the Army’s institutional post-ODS efforts to “fix the distribution problem” by settling on a business efficiency metric.

A series of Army white papers and Rand studies in the mid-1990s indicated that efficiencies in Order Ship Time (OST) were certainly under way at select CONUS and OCONUS test installations⁴⁸. These improvements were done at the margin, through focused local attention on implementation instructions and limited deployment of commercial equipment at a limited number of test-bed installations (Forts Bragg and Hood, and in U.S. Army Europe). The employment of this limited system in the Balkans helped to “prove” that we could gain distribution efficiencies in contingency sites. Contingency site is an apt description and should not be confused with a high intensity battlefield. Without introduction of new doctrine or materiel that could serve all CSS units on the battlefield, these limited measures served to reinforce the fallacious thinking that we were arriving at improved Battlefield Distribution methodologies.

⁴⁷ Michael Lewis, *Moneyball: The Art of Winning an Unfair Game* (New York: W.W. Norton and Company, Inc., 2003), 18.

⁴⁸ Nancy Moore, John M. Halliday, and Jerry M. Solinger, eds. *Material Distribution: Improving Support to Army Operations in Peace and War* (Santa Monica: Rand Arroyo Center, 1997), MR-642-A.

The establishment of an effective battlefield distribution concept was prefaced by the assumption that asset visibility technology would enable more efficient supply management. Central to gaining and maintaining asset visibility was leveraging technological enablers like Automated Identification Technology (AIT) Radio Frequency Identification Devices (RFID), and commercial off-the shelf (COTS) fleet management systems like the Movement Tracking System (MTS). The Department of the Army had neither service wide implementation instructions mandating use of these systems nor metrics to assess training proficiency. Reserve component organizations were not well resourced to take part in the limited transformation efforts occurring in the active component. Due partly to these reasons, units deployed to OIF demonstrated a low level of proficiency in operating these systems even if they had been fielded prior to arrival in theater.⁴⁹

Further militating against the efficacy of these enabler systems, was the fact that they were fielded to select units and were heavily dependent on contractor support for installation and maintenance. Moreover, operators were not trained at MOS producing sites, or officer / NCO basic or advanced courses. Trained operators were only produced at the rate contractors or units could conduct classes at home installations. Selecting the operator for a particular system, like a Movement Tracking System (MTS) base station, Combat Service support Control System (CSSCS), Joint Deployment Logistics Module (JDLM) or Battle Command Service Support System (BCS3) was dependent on the discretion of company-level organizations since unit authorization documents did not contain personnel slots for such operators. This also contributed to the lack of ownership by branch of service to produce trained operators for these systems. Since these systems were not fielded to the Total Army, they largely escaped documentation in doctrinal manuals, and unit mission training plans. Operators were not specifically trained in MOS producing schools and allocated to unit authorization documents. These doctrine, training,

⁴⁹ GAO Report #04-305, *Defense Logistics*, 21.

and materiel oversights worked in concert to ensure focused observation and assessment at maneuver training centers did not routinely take place.

Lack of Empirical Challenge

Determining whether war is an art or a science, or even a craft has been debated by theorists throughout the ages. If a commander's vision of a tactical problem can be equated to art, the concrete execution of supporting his vision, namely military logistics, can fairly be described as the science of war. In the domain of military logistics, one can certainly attempt to provide an equation for supporting military operations on the battlefield whereby support capabilities is equal to or greater than requirements. As we go about constructing doctrine and testing theories to address this domain of military science, surely we must adhere to scientific principles. Paul David Reynold's *A Primer in Theory Construction* identifies the single most important criterion for testing theories. "The most important criterion for evaluating the usefulness of any statement for the purpose of science is the degree of correspondence between the statement and the result of empirical research."⁵⁰ . The hypothesis that Velocity Management and Just-in-Time logistics could serve as an effective battlefield distribution solution was a bold but ultimately false notion made by the Army and defense intellectual community.

The Army, as overwhelming victor of Operation Desert Storm was not forced to radically redesign processes or materiel. Perhaps the lack of incentive to reform can be described as one element of the "burden of victory". Although we claimed to be seeking a "Revolution in Military Logistics", we proceeded in a very measured, evolutionary way without massive infusion of resources or radical departure from existing doctrine. Even when we had reasons to question the battlefield efficacy of velocity management and Just in Time Logistics, we minimized or explained away the disconfirming evidence through use of a *de minimis* intellectual defensive

⁵⁰ Paul David Reynolds, *A Primer in Theory Construction* (Boston: Allyn and Bacon, 1971), 115.

mechanism.⁵¹ Such reasons were posed in the Balkans during peacekeeping operations in 1995 and again in 1999⁵² and then later in the May 2001 Rand study by Eden referenced above.

The professional discourse in the Army and defense intellectual community seemed to wholly accept the notion that leveraging information management would serve in itself to improve battlefield distribution management. The following excerpt from the Army War College's *Parameters* journal is typical of the 1990s dialogue concerning anticipated information technology and materiel distribution efficiencies, "As information improves in responsiveness and comprehensiveness, the level of inventories and appropriate safety stocks will decline. Reduced inventories will result in significant cost savings that can be used to support other operations."⁵³ Such expectations also contributed to diverted investment in materiel and logistics communications infrastructure.

The officer corps has the responsibility to ensure the right decisions are made for improving the institution. It may be provocative yet nonetheless accurate to state that there was a lack of rigorous intellectual challenge from the officer corps during the 1990s logistics transformation. The officer corps accepted the premise that garrison peacetime improvements in OST efficiency would somehow translate into an effective distribution system in a combat zone. Sampling the professional writings of field grade officers at the staff and senior services colleges supports this statement. Prior to Operation Iraqi Freedom numerous monographs, theses and strategy papers examined logistics transformation generally and distribution based logistics in particular.

Army Colonel Cheryl Mann completed a May 2003 strategy research project for the US Army War College titled *Leverage Industry to Enhance DoD Logistics*. This paper provides an analysis of various civilian best business practices and technology enablers that can readily be

⁵¹ Gary Klein, *Sources of Power* (Cambridge: The MIT Press, 1998).

⁵² GAO Report, *Defense Logistics*, 4.

⁵³ Dr. Stephen P. Ferris, and Dr. David M. Keithly, "21st Century Logistics: Joint Ties That Bind," *Parameters – U.S. Army War College Quarterly*, Vol. XXVII, No. 1 (Autumn 1997): 38-49.

used to improve DoD logistics. What is striking in this paper is that at the time of publication even though OIF was just beginning and concerns over distribution management were surfacing, there is a sense that JIT logistics is still perfectly suitable for a high intensity battlefield. The article mentions vendor managed inventories and other services that presuppose the presence of vendors and contractors on the battlefield. The author concludes that efficient business practices would support an effective end-to-end distribution methodology in Iraq.⁵⁴

Major Brian Miracle wrote a Command and General Staff College Master's Thesis in June 1999 titled *Just in Time Effects on Peacetime Efficiency and Wartime Effects*. This thesis was ahead of its time in asking the question about how well a civilian industry practice would support a major theater war. Despite this combat arms officer's instinct that JIT had potential severe shortcomings, he proved in his thesis that JIT logistics would in fact be effective in a major war.⁵⁵ He captured many of the right concerns, but still ultimately found that an organization based on velocity management principles would be, "postured to readily adapt to the changed conditions of a major theater war (MTW), employ the same principles within the same processes, and then support the MTW".⁵⁶

Complexity, Systems Thinking, and Integrity

To ensure the integrity and effectiveness of the proposed Battlefield Distribution operating concept, the Army should have addressed the complex nature of the problem and viewed possible solution sets holistically. Viewing the problem / solution set in this way may have prevented unintended consequences and negative long-term results. The Army made several decisions in the 1990's that would serve to undermine the logistic sustainment capabilities

⁵⁴ Cheryl Mann, "Leverage Industry to Enhance DoD Logistics" (U.S. Army War College, 2003), 16.

⁵⁵ Brian Miracle, "Just-in-Time Effects on Peacetime Efficiency and Wartime Readiness" (MMAS Thesis, U.S. Army Command and General Staff College, 1999).

⁵⁶ Ibid., 43.

of the forces deployed to Operation Iraqi Freedom. The true underlying problems are manifold, and in the post major combat phase of OIF are coming into sharper relief.

The problem's first component was that Battlefield Distribution doctrine lacked refinement and integrity. TRADOC Pamphlet 525-77, *Battlefield Distribution* (not updated since 1998) made assumptions that were incongruent with the contemporary operating environment. Army doctrine that synthesized TTP for execution on the battlefield had not been published. The conceptual construct of a distribution management center was a step in the right direction, but implementation instructions and authorization documents were not published.

The second problem was the lack of a single logistics C4I system for anticipatory planning, decision-making and execution monitoring. The Army's standard Army management information systems (STAMIS) for logistics were not integrated into a single database that could be queried by a distribution manager moving forward in the rush from Kuwait to Baghdad. The proposed CSS component of the Army Battle Command System (ABCS), the Combat Service Support Control System (CSSCS) was a failed system and was not used at all during OIF to assist distribution managers. The traditional STAMIS were configured in an industrial age, specialized forest of stovepipes. Communications investments had been made in a terrestrial line of sight MSE backbone that was not operable on the move.⁵⁷ During OIF, operational distribution managers in Kuwait did not have a single CSS decision support and execution-monitoring tool to generate a logistics common operating picture (LCOP) or control materiel or transportation assets. LCOP in Kuwait was generated by a fusion of Joint Deployment Logistics Module (JDLM), Integrated Logistics Analysis Program (ILAP) and In-Transit Visibility (ITV).⁵⁸

Thirdly, there was no provision made for specially trained distribution managers. As an example, a company grade Quartermaster officer slated for a petroleum assignment receives eight

⁵⁷ Mark Shaber, Scott Hedburg, and Troy Wesson. *V Corps: C4ISR Integration AAR* (Heidelberg, Germany: V Corps, US Army Europe, 2003).

⁵⁸ Claude V. Christianson, "Delivering Logistics Readiness to the Warfighter," *Army Logistician* 36 (January-February 2004), 5.

weeks of specialized training at the Quartermaster Center and School's Petroleum and Water Laboratory. In contrast, an officer expected to manage operational-level battlefield distribution has no tailored professional military education options. This is no doubt due in part to the lack of refined doctrine.

Finally, as a result of underinvestment in CSS formations throughout the 1990s, logistics units arrived in Kuwait and Iraq for Operation Iraqi Freedom under resourced and not adequately survivable, mobile and lethal. This echoes the concerns of Gordon and Trainor detailed in chapter 1. As an example from an active duty division echelon CSS unit, the Quartermaster Company in the Division Support Battalion of the 4th Infantry Division (the Army's cutting edge Force XXI Division), is authorized over 150 personnel and 90 tactical wheeled vehicles. However, the unit is only authorized three M2 .50-caliber machine guns and two MK19 40mm automatic grenade launchers.⁵⁹ This equates to roughly one crew served weapon per 20 vehicles and/or 30 personnel. The unit is not authorized any hardened or armored vehicles. The Reserve component that arrived to support OIF was in significantly worse shape in terms of force protection assets within CSS units than their active duty counterparts.

Lack of Ownership

The Army has not established a single agency charged with process ownership for Battlefield Distribution conceptual development, professional military education and materiel solutions. The Army's Combined Arms Services and Support Command (CASCOM) is the Army's process owner for distribution management. However, CASCOM has historically directed this process ownership toward improving distribution efficiency through means of best business practices. A visitor to CASCOM's distribution management website can quickly see that the "Define-Measure-Improve" theme and the process improvement teams' metrics are

⁵⁹ Author commanded unit May 1999-December 2000.

focused almost single-mindedly on monitoring Order Ship Time and other business metrics.⁶⁰

There is no apparent connection to the doctrine, materiel, or training necessary to facilitate effective battlefield distribution. This lack of process ownership stands in contrast to recent changes made by the Department of Defense.

In September 2003 the Department of Defense established the Commander U.S. Transportation Command (USTRANSCOM) as the department's single distribution process owner (DPO). This designation was further refined in a July 2004 letter signed by the Joint Staff's Director for Logistics (J4) and the Deputy Undersecretary of Defense for Logistics and Materiel Readiness that made TRANSCOM the office of primary responsibility (OPR) for global distribution, including both movement of forces and force sustainment.⁶¹ This OPR mandate shifted integration of distribution materiel solutions into TRANSCOM's portfolio.

As an example of the self-assessment going on inside the Army's senior logistics leadership ranks in the wake of OIF, *The Quartermaster Professional Bulletin* published an article by the Quartermaster General (then serving as Deputy CG), Brigadier General Scott West. The article addressed shortcomings in distribution management and supporting technology training in the institutional base.⁶² The article defines distribution as a fusion of the supply and transportation functions, which incorporates the ability to "know" the sustainment requirements of the warfighter with great accuracy, "see" where the material is located, exercise dynamic control of that materiel and optimize transportation to get the right materiel to the right place at the right time. BG West states the intent at the USAQMC&S to teach Quartermasters the tactics, techniques and procedures required to gain visibility and control delivery of materiel. BG West points out the challenges of the current state of training when he confesses that, ". . . to tell the

⁶⁰ Distribution Management website <http://www.cascom.army.mil/adm/>; Internet; accessed 1 December 2004.

⁶¹ Letter signed by Admiral G.S. Holder, Joint Staff J4 and DUSD(L&MR), 28 Jul 2004.

⁶² Scott West, "Training Distribution Managers," *Quartermaster Professional Bulletin* (Winter 2003).

truth, we teach the technology but do not assimilate the technologies into distribution management.”⁶³

⁶³ Ibid.

CHAPTER 3 - OIF SNAP-BACK

“He saw the route he would have to take but not the obstacles.”
- Dietrich Dorner (from *The Logic of Failure*)

As the first multiple Corps-level warfighting event since Desert Storm, Operation Iraqi Freedom served as the first real-world empirical challenge to the Army’s operating concept of Battlefield Distribution. There is no doubt that US Army logisticians worked incredibly hard to ensure that combat operations would not reach a premature culmination point because of supply shortfalls during Operation Iraqi Freedom (OIF). However, the extraordinary efforts of tactical logisticians were not enough to overcome the systemic doctrinal failures of the distribution system at the operational level. Several sources document these challenges and failures. The sources examined here include the Army’s AAR *On Point*, General Accounting Office reports, and perhaps most importantly, the After Action Reviews of the warfighting units themselves.

Author Gary Klein in his book *Sources of Power* outlines a concept called “snap-back” that serves as a self-correcting process for decision makers’ mental simulation conducted during problem solving. The concept holds that as decision makers progress along a mental simulation of solution implementation they tend to minimize discrepancies or contradictions until too much disconfirming evidence accumulates to be explained away. At this point an alternate simulation is required.⁶⁴ If this concept of snap-back holds as an analogy for the institutional Army, perhaps OIF will indeed serve as the snap-back event that requires us to develop an alternate solution set for implementing effective battlefield distribution-based logistics.

On Point

Authored by retired U.S. Army Colonel Gregory Fontenot and his team, *On Point*, serves as the Army’s quick look study of the initial combat phase of Operation Iraqi Freedom. The logistical challenges illustrated in *On Point* demonstrate that battlefield distribution, as an

⁶⁴ Klein, *Sources of Power*, 69-70.

operating concept, lacked systemic integrity and no single agency had process ownership with a holistic view of the complex system. These challenges were present well before combat commenced, during the combat phase, and continued through transition to subsequent stability and support operations (if to a lesser degree).

During the preparation for OIF, the Deputy Commanding General for Support of Third U.S. Army focused on theater infrastructure improvements (ports, ranges, and bed-down facilities) and preparation for joint reception, staging, onward movement and integration (JRSOI).⁶⁵ No specific mention is made in *On Point* about detailed planning for theater distribution or a logistics C4I framework. Logistics preparation of the theater seemed focused on transportation assets, JRSOI, and planning consumption factors.

On Point demonstrates the lack of ownership of the distribution process. At the operational level, three general officers “shared” responsibility for logistics distribution. They were the Coalition Forces Land Component Command (CFLCC) C4, 377th Theater Support Command (TSC) Commander, and the Commander of the 143d Transportation Command. These general officers were charged to ensure that the tactical logistics executors at the V Corps Corps Support command (COSCOM) and I Marine Expeditionary Force (MEF) Force Service Support Group (FSSG) level had all the supplies they needed.⁶⁶

Despite their management efforts and the work of thousands of logisticians on the ground, “Most logistic functions and classes of supply during the campaign functioned just barely above subsistence level.”⁶⁷ This shortfall cannot be attributed to a single doctrinal or materiel cause. The problem of battlefield distribution is complex as was demonstrated in the previous chapter. The CFLCC C4 (now Army G4), attributed the failure to the fact that there is no single

⁶⁵ Gregory Fontenot, E.J. Deegen, and David Tohn, *On Point, The United States Army in Operation Iraqi Freedom* (Fort Leavenworth: Combat Studies Institute Press, 2004), 31-41.

⁶⁶ Ibid., 148.

⁶⁷ Ibid., 408.

agent for managing “cargo” distribution.⁶⁸ This is indeed a key part of the problem, but even if there was a single responsible agent for battlefield distribution, OIF also demonstrated that the distribution manager must have a viable C4I system with which to execute his responsibilities. A “cybernetic disconnect” was described in *On Point*. This “disconnect” represented the systemic failure of several technological enablers (ITV, automated identification systems, RFID, etc.) to provide effective Total Asset Visibility (TAV) to assist distribution managers. Compounding this problem was the Army’s reliance on a rigid communications system. “the Army of 2002 remained tied to line-of-sight terrestrial equipment – 30-50km range FM radios or Mobile Subscriber (MSE).”⁶⁹ The sum of these problems equates to the frustrating realization that, “OIF highlights a problem identified during DESERT STORM that remains to be solved.”⁷⁰

GAO Report # GAO-04-305R

The General Accounting Office (since renamed the Governmental Accountability Office) published a report on 18 December 2003, with the subject *Defense Logistics: Preliminary Observations on Effectiveness of Logistics Activities During OIF*. The report’s general findings indicate that despite the overall success of the combat phase of OIF, there were substantial sustainment problems that revolved mainly around asset visibility and distribution management. The report goes on to specify four problem areas, three of which have a direct bearing on the Army’s Battlefield Distribution operating concept.⁷¹

The four specific areas identified in the GAO report were: 1) Poor asset visibility 2) Insufficient and ineffective theater distribution capability 3) Failure to apply lessons learned from previous operations 4) Other logistics issues (lack of spare parts, cannibalization of equipment,

⁶⁸ Ibid., 149.

⁶⁹ Ibid., 62.

⁷⁰ Ibid., 150.

⁷¹ General Accounting Office, *Defense Logistics: Preliminary Observations on Effectiveness of Logistics Activities During OIF* (Washington, D.C.: GPO, 2003), 3-5. GAO-04-305R.

and unreliable DoD contractors).⁷² For the most part these areas would seem to merit the critique they received. However, it is interesting to note that under item #2 the GAO report states that, “In addition, logistics personnel were not adequately trained in various logistics functions, such as operating material handling equipment and managing theater distribution centers.”⁷³ The two examples seem to be quite different in scale and non-sequiter. Perhaps more importantly, the report identifies “theater distribution centers” as if they were standard, doctrinal organizations governed by regulations and SOPs. In fact, the TDC in Kuwait was an ad hoc field expedient distribution node. It is unclear from the context of the report if the “theater distribution centers” referred to is the Camp Doha Central Receiving and Shipping Point or the ad-hoc TDC established after the war commenced, or even the CENTCOM Deployment and Distribution Operation Center (CDDOC). Regardless, none of these entities are doctrinal warfighting organizations that logisticians Army-wide could be expected to be trained to operate.

Unit AARs

There is a large body of anecdotal evidence that has emerged based on the perceptions of units deployed for the initial combat phase of Operation Iraqi Freedom (OIF). Reviews of this initial body of observations provide a disparate view of how effectively the Army and joint logistic system supported the joint force and maneuver commanders. Some senior leaders have praised the efficiency of the deployment, preparation for combat and sustainment of forces from a macro level. Despite this praise for the strategic level successes, there is a definite perception on the part of war fighting commanders that the emerging battlefield distribution doctrine and accompanying C4I system was not effective or efficient during the initial combat phase of Operation Iraqi Freedom. The Third Infantry Division was one of the Army’s main maneuver elements engaged in ground combat during OIF. US Army Europe’s V Corps was the main

⁷² Ibid.

⁷³ Ibid., 4.

headquarters element for Army ground forces. The initial written AARs by these units for OIF and the comments of Lieutenant General William S. Wallace (commanding general for V Corps during initial combat operations in OIF) indicate a rejection of the “just-in-time” logistics concept generally, and specifically fault the distribution of critical supplies in the first weeks of combat in OIF.

There was some early high-level praise for the effectiveness of the DoD and Army’s focused logistics and battlefield distribution during OIF. In a September 2003 article in the *Army Times*, General Paul J. Kern, Commander of the Army Material Command and the service’s senior logistics commander, contrasted the hugely inefficient and wasteful stockpiling of shipping containers of equipment and supplies in the 1991 Gulf War against the lean, precise and information assisted 2003 execution during OIF. “We used about one third of the total equipment...as we did the last time for the equivalent sized force, because we really knew where it was. We weren’t guessing.”⁷⁴ General Kern stated that the uniform placement of radio frequency (RF) tags on each container and subsequent use of RF automated identification technology (RF-AIT) allowed CSS personnel to know the exact contents of each container without having to open and search through the contents, thereby expediting its distribution to owning units. His overall assessment was that OIF featured a vastly more efficient supply line than previous conflicts. This early praise may have been appropriate for strategic in-transit visibility but would soon prove to be incorrect for describing operational and tactical distribution.

Similar praise came from then Lieutenant General John Abizaid on 31 March 2003 in a briefing from Central Command Headquarters (Forward) in Doha, Qatar. He stated, “I’m certain that when the history of this campaign is written, that people will look at this move that the land forces have made in this amount of time as being not only a great military accomplishment, but as

⁷⁴ Vince Crawley, “Iraqi Freedom a Logistical Success, Says Logistician,” *Army Times*, 8 September, 2003.

an incredible logistics accomplishment.”⁷⁵ This positive comment stands in stark contrast to the stated perceptions of the operational-level logisticians and war fighting units written in their initial operational AARs.

The staff of the 377th Theater Support Command (TSC) outlined several lessons learned from their role as the operational-level logistics command for Operation Iraqi Freedom. One of the key specified tasks assigned to them by Coalition Forces Land Component Command (CFLCC), was to execute distribution management. The plan for OIF called for the TSC to have an effective theater distribution system established and delivering supplies to division, brigade and regimental support areas concurrent with Joint Reception, Staging, Onward-Movement, and Integration (JRSOI).⁷⁶ Establishing an effective distribution system in support of OIF was made extremely difficult due to the decision to move from the established time phased force deployment data (TPFDD) to the request for forces (RFF) deployment sequencing. This decision caused numerous combat service support units to deploy after combat units.⁷⁷ The political decision to delay deployment of reserve component personnel until early 2003 after the holiday season, also kept critically important CSS personnel out of theater until after combat units had already moved into the reception, staging, onward-movement and integration (RSOI) process. This decision and subsequent desynching of logistical support capability was noted in the 18 December 2003 GAO report as well.⁷⁸ This sequencing error and subsequent negative effects echoes nearly identical errors from Operation Desert Storm.

The lack of transportation assets in theater as ground combat operations commenced caused detailed micro-management of those assets. The CFLCC C4, MG Christianson personally chaired the daily joint transportation board in Kuwait during the initial combat phase of OIF. Given the shortage of transportation assets, commanders and logistic managers had to make

⁷⁵ Ibid.

⁷⁶ Headquarters, Joint Forces Command, *Joint Lessons Learned: Operation Iraqi Freedom, Major Combat Operations – Coordinating Draft* (Norfolk: USJFC, 2004), 89-94.

⁷⁷ Fontenot, *On Point*, 408-411.

⁷⁸ GAO Report, *Defense Logistics*.

critical choices about which commodities to move on the extremely scarce assets. Ultimately, subsistence and bottled water were moved at the expense of other commodities, specifically vehicle repair parts.⁷⁹ This decision led to reduced readiness rates of combat systems forward and led to a perception on the part of maneuver commanders that the distribution based logistic system, or “just in time logistics” was a failure.

One unquestioned battlefield distribution success during OIF however, was in the bulk petroleum field. The Army’s 49th Quartermaster Group (Petroleum) was responsible for all petroleum storage, distribution and water purification for ground forces in OIF. Since the Group managed both the supply commodity and the mode of transportation, they easily exercised unity of effort and command. The 49th Group commander was given responsibility by the 377th TSC commanding general to execute petroleum distribution from Kuwait to units in Iraq⁸⁰. The success of the bulk petroleum mission demonstrates the effectiveness gained when a single process owner has the responsibility for a commodity’s holistic distribution management.

The main tactical sustainment lesson learned for the Third Infantry Division during OIF was that “just in time logistics” does not work during continuous offensive operations. There were several contributing factors related to battlefield distribution that fed into this overall logistical assessment. Chief among those factors was the lack of a functioning communications system that allowed distribution managers to gain and maintain logistical situational awareness during the rapid advance on Baghdad. The Third Infantry Division made unprecedented gains as it moved over 300 kilometers in the first 48 hours of combat. This dominance of the battle space stretched lines of communication beyond what was logistically sustainable given currently fielded communications systems and logistics decision support tools. Immediately after crossing the line of departure the division was unable to transmit logistics requirements using STAMIS because they were dependent on a non-mobile MSE communications architecture. The inability to

⁷⁹ Fontenot, *On Point*, 149, 408-409.

⁸⁰ Ibid., 147.

transmit data while on the move and lack of transportation assets fed a downward spiral from which it was nearly impossible to recover.⁸¹ When the division did actually halt and had the opportunity to conduct maintenance, there was not a responsive distribution system available to provide critical Class IX repair parts. Most maneuver units in the Third Infantry Division conducted sustained operations for 21 days without receiving a single repair part.⁸²

The V Corps commander Lieutenant General William S. Wallace endorsed similar findings about the limited capability of CSS C4I systems in his AAR on information systems and battlefield integration during OIF. The operational discussion on CSS in the AAR starts with the following observation: “The combat service support information systems available from unit to the Corps-level are broken. This is primarily due to the lack of a robust communications architecture to support CSS STAMIS systems while units are moving”.⁸³ The AAR goes on to recommend that the Army field to Distribution Management Centers at all echelons a system similar to the Joint Deployment Logistics Module (JDLM) as a means of providing 100% logistics awareness across the battlefield. V Corps trained with the JDLM prior to deployment to OIF. The JDLM is a simulation system that provides deployment and sustainment training and leader decision support tools. It also has the capability of providing distance collaborative planning tools and can interface with several joint and Army STAMIS. Although this system is not the ideal or ultimate Battlefield Distribution C4I system, it was the closest thing V Corps could employ to realize the benefits of battlefield distribution.

These observations by senior leaders reflect both positive and negative impressions of the current state of implementation of battlefield distribution. Although there have clearly been large strides made since Operation Desert Storm in distribution management, ultimately the confidence the customer has in the system is one of the main measurements of the effectiveness of the

⁸¹ Headquarters, Third Infantry Division, *Operation Iraqi Freedom After Action Report – Final Draft* (Fort Stewart: Headquarters, Third Infantry Division, 2003), 1-9.

⁸² Ibid.

⁸³ Mark Shaaber, Scott Hedburg, and Troy Wesson, *V Corps: C4ISR Integration AAR* (Heidelberg, Germany: V Corps, US Army Europe, 2003), 34.

system. Review of the initial AARs from OIF on the subject indicates that the stated goals of battlefield distribution have not been fully or even partially realized by recent battlefield commanders.

CHAPTER 4 - RESPONSES TO OIF AND THE WAY AHEAD

“Ever learning and never able to come to the knowledge of the truth.”

II Timothy 3:7

Chapter 3 introduced the notion of OIF snap-back as a possible wake up call to the service about the need to focus on effective battlefield distribution vice efficient distribution management. Indeed, the AARs at the macro and unit level, GAO findings, and the interest of Congress have had a catalyzing effect on refocusing the Army’s efforts at realizing an effective battlefield distribution system. There have been numerous cascading effects rolling from the Department of Defense down to the service components that are further shaping the Army’s responses.

DoD Responses

In response to the logistical difficulties in OIF and to assist ongoing transformation, DoD has established ownership at the OSD level through appointment of a logistics executive agent. That role is filled by the Deputy Undersecretary of Defense for Logistics and Materiel Readiness (DUSD, L&MR). The Commander USTRANSCOM was designated as the DoD’s Distribution Process Owner on 16 September 2003.⁸⁴ Per a July 28, 2004 directive by the Joint Staff J4 and Deputy Undersecretary of Defense for Logistics and Materiel Readiness, the Commander USTRANSCOM has further been designated as the Office of Primary Responsibility (OPR) and portfolio manager for that subset of logistics systems providing key capabilities in support of distribution (force movement and sustainment). USTRANSCOM will serve as the integrating

⁸⁴ Memo signed 16 September 2003 by Joint Staff Director for Logistics and the Deputy Undersecretary of Defense for Logistics and Materiel Readiness. Subject: *Distribution Process Owner*.

office for the Distribution Architecture subset of the Logistics Architecture, under the oversight of DUSD(L&MR).⁸⁵

Army Responses

The Army G4 addressed the central importance of rectifying the OIF shortcomings to Battlefield Distribution and the reforms they will drive in a publication titled *Logistics*

Transformation: Adapting to Next-Generation Warfare and Technology Change. Here he stated:

“The bottom line is that logistics technology connectivity, coupled with an integrated suite of logistics air and surface delivery capabilities and enablers, will provide our CSS [Combat Service Support] forces with the required wherewithal to accomplish logistics resupply and sustainment missions. And we will be able to do so at the right place, at the right time and with the right supplies in support of the JTF Commander’s CONOPS [concept of operations] and his ever-changing/dynamic Battlefield Distribution requirements.”⁸⁶

This statement seems to capture the essence of the problem without specifying the steps to remedy the situation. The following G4 white paper seems to bring greater refinement to the elements of the problem and serve as focus areas for the G4’s tenure.

As a result of his first hand observations in OIF, the Army G4 established four focus areas in his December 2003 White Paper titled *Delivering Materiel Readiness to the Warfighter*.⁸⁷ The focus areas are: 1) Connect Army logisticians. 2) Modernize theater distribution. 3) Improve force reception. 4) Integrate the supply chain. Three of these focus areas deal with improving logisticians’ asset visibility and ability to manage distribution. The result of the single-minded pursuit of peace time efficiency is summed up in the paper, “As a

⁸⁵ Memo signed 28 July 2004 by Joint Staff Director for Logistics and the Deputy Undersecretary of Defense for Logistics and Materiel Readiness. Subject: *Management of the Distribution Systems Portfolio: Sustainment and Force Movement*.

⁸⁶ Claude V. Christianson, “Logistics Transformation: Adapting to Next-Generation Warfare and Technology Change,” *Army Logistician* 36 (January-February 2004): 4-6.

⁸⁷ Claude V. Christianson, *Army G4 White Paper* (Washington, D.C.: Headquarters, Department of the Army, 2004), 1.

result, Soldiers are at the end of a long line of communication with reduced inventories and an old distribution system.”⁸⁸

The G4’s white paper is to be commended for assigning a high priority to improving the Army’s ability to execute effective battlefield distribution. However, the white paper does not go far enough in providing resolution to establishing a single C4I system. The paper states that, “Resource planning in Battle Command Sustainment and Support System (BCS3), Global Combat Support System – Army (GCSS-A), Logistics Modernization Program (LMP), and Product Life-cycle Management (PLM+) is critical for implementing fully Focus Area 1 from factory to foxhole. The logistics common operating picture (LCOP) will be improved by this network connectivity.”⁸⁹ This seems to indicate a single C4I system to serve as a decision support and execution monitoring tool for battlefield distribution is still some years away. The paper also does not assigning a single executive agency for ownership of Army Battlefield Distribution. The white paper states, “The G4 will work with CASCOM and USTRANSCOM to develop this solution from factory to foxhole in the joint environment.”⁹⁰ Unfortunately, no single commander or agency is identified in the Army to serve as battlefield distribution process owner as USTRANSCOM has been established at the joint level.

There is currently a plan of action to help mitigate this service deficiency. The Logistics Training Department of the USAQMC&S is currently establishing a Distribution Management Training Facility (DMTF). This facility will incorporate live, virtual and constructive training to develop distribution management TTPs, test new distribution technologies, and produce competent Quartermaster leaders and distribution staffs.⁹¹ This facility will help alleviate a critical shortfall in the Army’s current inventory of trained distribution managers, as well as

⁸⁸ Ibid., 3.

⁸⁹ Ibid., 2.

⁹⁰ Claude V. Christianson, *Army G4 White Paper* (Washington, D.C.: Headquarters, Department of the Army, 2004), 2.

⁹¹ Distribution Management Training Facility concept brief, <https://www.cascom.army.mil/PRIVATE/ADMPRIVATE/DM.htm>; Internet; accessed 14 December 2004.

provide a focal point for further refining the doctrine, TTPs, and supporting technologies for battlefield distribution.

Current Status of Joint and Army Doctrine

There is a clearly established nesting of efforts written in doctrine between the Army's implementation of battlefield distribution as a central component in the revolution in military logistics and the joint communities' doctrine of focused logistics. The Army's reform efforts clearly support and are aligned with the joint communities' logistics transformation azimuth that was charted prior to the Global War on Terror (GWOT). However, as the Army continues to be fully engaged in worldwide operations and simultaneous transformation efforts, incorporating vital battlefield lessons learned and evolving concepts are moving much faster than joint or Army doctrine.

The Army's capstone field manual on combat service support *Field Manual 4-0, Combat Service Support*, published in 2002, outlines the service's initial efforts to transition from a supply-based to a distribution-based logistics system. The field manual states that the strategic responsiveness demanded of future Army forces will mandate an agile, responsive combat service support system in order to enable effective operations across the full spectrum of operations. In order to achieve this effectiveness and fulfill the Army's role in theater distribution in support of the joint, interagency, and coalition community, several critical aspects must be addressed and effectively employed. These critical aspects include: 1. Centralized management. Establishment of distribution management centers at every echelon with integrated end-to-end asset visibility and control of the distribution pipeline. 2. Maximum use of throughput, bypassing as many echelons of the supply system as possible to move commodities forward on the battlefield. 3. Configured loads of single or multi-commodity supplies built on anticipated or actual need of the customer. 4. Scheduled delivery of routine commodities coordinated between distribution manager and customer. 5. Time-definite delivery parameters established between the

distribution manager and supported commander ensure confidence of the customer and reduction of forward stockpiles of supplies on the battlefield.⁹² These critical aspects of distribution-based CSS are also coupled with other management principles and planning tools to fully realize the Army's battlefield distribution goals as outlined in *TRADOC PAM 525-77, Battlefield Distribution*.

Effective distribution relies not only addressing the principles above, but also maximizing the utility of several other concepts. The Army has pursued a total-quality management process-improvement program known as velocity management. This concept, also widely practiced in civilian industry, strives to provide world-class logistic support by leveraging information technologies and optimizing processes. The overarching Army goal is to get supplies to the war fighter in days or hours instead of weeks.⁹³ This goal is accomplished by leveraging information technologies such as radio frequency identification devices (RFID), automated manifest system (AMS), optical memory cards (OMC), and materiel release order control system (MROCS) using commercial off-the-shelf state-of-the-art technology. These information enablers ideally will feed ultimately into the joint total asset visibility (JTAV) system and the global transportation network (GTN) and create a single data warehouse that operational and tactical distribution managers will be able to use in order to meet customer requirements.

There are several planning assistance tools available to distribution managers that aid in deployment planning, customer needs analysis and provide reach-back from deployed locations. Planners can use the deployment stock planner (DSP) to establish a deployment authorized stockage list (ASL) based on mission and anticipated environment. Distribution managers that are trying to anticipate customer needs and trends can use the equipment downtime analyzer (EDA). This decision support tool improves measurement of equipment and component readiness and allows anticipation of repair part requirements based on trend analysis. Other

⁹² Headquarters, Department of the Army, Field Manual 4-0, *Combat Service Support* (Washington, D.C.: Headquarters, U.S. Army, 2002).

⁹³ *Ibid.*, 1-14.

metrics that distribution managers must monitor are customer wait time (CWT) and Requisition Wait Time (RWT). These metrics identify the speed and efficiency of the distribution system by tracking the time between customer and SSA level request generation through verified receipt of supplies at the customer location.⁹⁴ Lastly, a web-based tool that provides reach-back for deployed distribution managers is the integrated logistics analysis program (ILAP). This interactive database allows managers to proactively manage assets, analyze logistic performance, and provide responsive support.

U.S. Army *Field Manual 4-20, Quartermaster Principles*, published in 2003, identifies the role of the Quartermaster branch in distribution management. The key executors of distribution management reside in distribution management centers (DMCs). DMCs are found as a part of the support operations office at each respective level of sustainment, theater through division. Starting in the Communications Zone (COMMZ) with the Theater Support Command (TSC) at the theater and operational level of logistics and moving forward through the combat zone, with the Corps Support Command (COSCOM) and Division Support Command (DISCOM) at the tactical level of sustainment, there are DMCs located at each echelon. DMCs provide the necessary fusion of commodity management and transportation management that enables unity of effort and single process ownership necessary for effective distribution management. Figure 1 shows the critical inter-relationships necessary for effective distribution management. The figure also highlights the most important factor in assessing the success of the distribution management execution: The satisfaction of the commander.⁹⁵

⁹⁴ Marygail Brauner and Art Lackey, *CWT and RWT Metrics Measure the Performance of the Army's Logistics Chain for Spare Parts* (Santa Monica: RAND, 2003). RB-305-A.

⁹⁵ Headquarters, Department of the Army, FM 4-20, *Quartermaster Principles* (Washington, D.C.: GPO, 2003), 6-4.

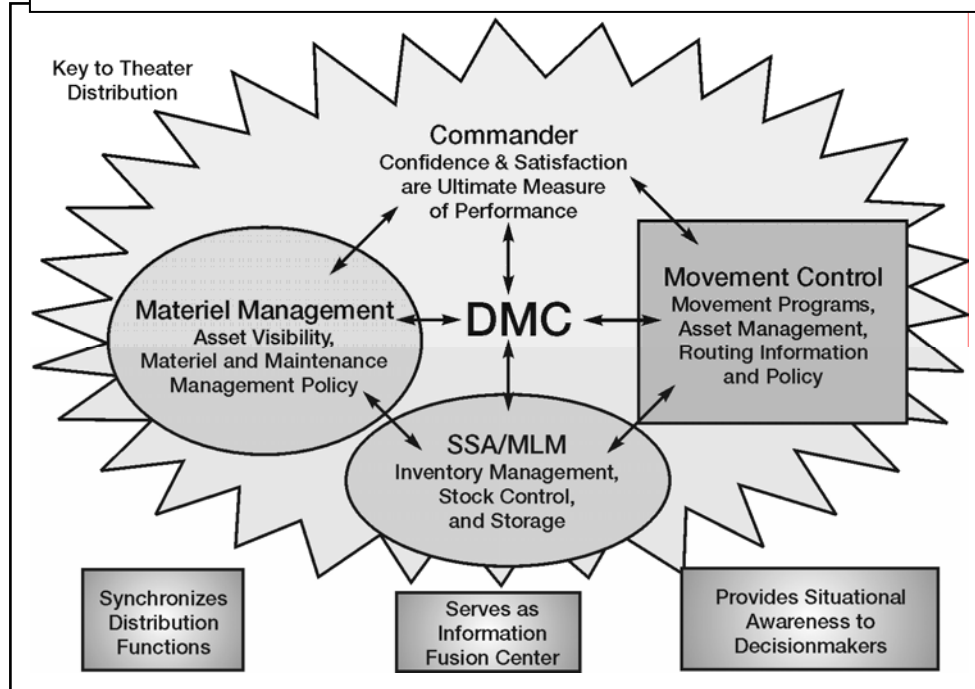


Figure 1. Distribution Management Center (DMC) Critical Inter-Relationships

Enablers and The Future

One of the concluding implications addressed in *On Point* regarding logistical challenges is that, “Investments in in-transit visibility during the 1990s failed to pay off”.⁹⁶ Technology enablers are described as having promise but they had not sufficiently matured by March 2003 to deliver on the *perceived potential*. These comments are interesting for at least two reasons. First, they acknowledge an implied expectation by the warfighting customer that an effective “Just in Time” logistics system existed. They also serve as a sort of *de minimis* excuse for the lack of an effective system for asset visibility and hence battlefield distribution. Reliable asset visibility, (like a coherent doctrine, single C4I system and trained distribution managers) is just one of the requisite enablers for the battlefield distribution concept. However, when measured against the failings in other areas Radio Frequency Identification Devices (RFID) and the Movement Tracking System (MTS) proved to at least be effective (if not fully leveraged and synthesized) on

⁹⁶ Fontenot, *On Point*, 410.

the battlefield and can be considered as key components of a future Army battlefield distribution system.

RFID tags and supporting database systems, both commercial and military, are credited with vastly improving the strategic in-transit visibility during OIF in comparison to Operation Desert Storm. Theater distribution managers had very good visibility of supplies inbound to theater.⁹⁷ The hand held and fixed interrogator stations in theater provided hands-off data capture with high fidelity that should have dramatically improved theater distribution. That is to say when they worked and were manned by trained operators. The harsh desert environment blew down interrogator towers and dust fouled hand held interrogators within days of operations. This lack of ruggedness is partly due to the lack of military development of this commercial off-the-shelf (COTS) equipment. Often there was no consistency in the way data was input onto RFID tags. This was due in part to widely varying training levels among deployed units and the fact that there was initially no DoD, service or regional AOR standard for data management. However, when the system was working it provided a single repository for end-to-end movement of RFID-tagged materiel. The associated web-based inquiry capability was leveraged by the LCOP to provide one of the few valid logistical information databases during the war.⁹⁸

Following the proven potential battlefield effectiveness of the RFID technology, the Department of Defense mandated the use of data-rich RFID tag technology for the DoD sustainment system by 2005.⁹⁹ In December 2003 the US CENTCOM Commander mandated immediate use of RFID data rich tags with content to the detail level of national stock number (NSN) and nomenclature.¹⁰⁰ Adoption of this standard mirrors the business practice of the largest commercial retailer in the world, Wal-Mart who has mandated its top vendors begin RFID

⁹⁷ Science Applications International Corporation, *Objective Assessment of Logistics in Iraq* (McLean, VA: SAIC, 2004), 70.

⁹⁸ Ibid., 62.

⁹⁹ Memorandum from USD(AT&L) establishing RFID policy October 20, 2003.

¹⁰⁰ Autodin message dated 31 Dec 03, *New In-Transit Visibility (ITV) Requirements for the USCENTCOM Area of Responsibility (AOR)*, <https://www.cascom.army.mil/provate/admprivate/dm.htm>; Internet; accessed 11 December 2004.

tagging all cases of merchandise delivered into its supply chain by 1 January 2005.¹⁰¹ Leveraging this kind of technology that is becoming common in civilian industry will assist not only in driving down costs per RFID tag burned (which was about \$90 per active RFID tag in the early combat phase of OIF¹⁰²), but it should also assist in increasing the ease with which training programs can be introduced into Training and Doctrine Command schools on a broad scale.

Savi Technology is a leading civilian industry provider of Radio Frequency Identification (RFID) solutions to the DoD. The company has published two case studies: *Savi in Operation Iraqi Freedom* and *Savi – Bosnia Case Study*. These two short case studies demonstrate the increase in pervasiveness and volume of RFID technology applications in the Army. The OIF study shows an exponential growth in database queries from 3,148 in March 2001, to 28,000 in March 2002, to over 2 million in March 2003 as the OIF offensive commenced.¹⁰³ Savi Tech and other civilian technology providers are becoming indispensable to our efforts at gaining in-transit and total asset visibility (TAV). They also represent a critical vulnerability during the combat phase of future conflicts unless we train soldiers to be fully capable of establishing and operating these equipment networks.

In April 1999 the General Accounting Office published a report titled *DoD Could Improve Total Asset Visibility Initiative With Results Act Framework*. This report identified Department of Defense failures to establish and enforce an implementation plan for asset visibility technology. The challenges to implementation included, “cultural resistance to change and service parochialism, the lack of outcome-oriented goals and performance measures, and the lack of management accountability.”¹⁰⁴ The report identified the shift of DoD executive agency

¹⁰¹ Matthew Quirk, “New Reconnaissance at Wal-Mart,” *The Atlantic*, December 2004, 17.

¹⁰² Science Applications International Corporation, *Objective Assessment of Logistics in Iraq* (McLean, VA: SAIC, 2004), 70.

¹⁰³ Savi Technology, “Case Study: Operation Enduring Freedom / Operation Iraqi Freedom (OEF/OIF) A Savi Case Study on Support of U.S. Military Operations in Afghanistan & Iraq.” <http://www.savi.com/products/so.defense.shtml>; Internet; accessed 11 December 2004.

¹⁰⁴ General Accounting Office, *DoD Could Improve Total Asset Visibility Initiative With Results Act Framework* (Washington D.C.: GPO, 1999), 15.

for TAV from the Army G4 to the Director Defense Logistics Agency in June 1998. The service components were also reported to, “lack plans that explain how they would integrate TAV into their work processes to support transfers of assets to other components, and they did not provide time frames for realizing the goals set for TAV in Department planning documents.”¹⁰⁵ Not until September 2003 would DoD partially correct these shortfalls with the above referenced RFID implementation directives. The DUSD(AT&L) would further clarify ownership at the DoD level by assigning the portfolio for distribution technology integration to USTRANSCOM in July of 2004.¹⁰⁶

Another proven performer during OIF was the Movement Tracking System (MTS). This commercial trucking asset visibility system provided a capability equivalent of Blue Force Tracker to the service support organizations. MTS is another COTS system that provides the service with a low cost solution for mobile satellite two-way text messaging and navigation.¹⁰⁷ The systems use of commercial satellite service proved to be reliable and robust in the austere desert environment of Kuwait and Iraq when other communications systems failed over extended distances.¹⁰⁸ MTS is currently being refined to increase connectivity with other logistics information systems to include GCSS-Army and TC-AIMSII. Future initiatives also call for incorporating vehicle diagnostics reporting through MTS.¹⁰⁹ This expanded capability will give distribution managers more refined asset visibility and improved fleet management.

The elusive enabler has served as a potential fulcrum point from which the Army may leverage the long sought after Revolution in Military Logistics. The time is past due for the service to stop thinking loosely and writing imprecisely about the role of enablers. RFID and

¹⁰⁵ Ibid., 16.

¹⁰⁶ Memo signed 28 July 2004 by Joint Staff Director for Logistics and the Deputy Undersecretary of Defense for Logistics and Materiel Readiness. Subject: *Management of the Distribution Systems Portfolio: Sustainment and Force Movement*.

¹⁰⁷ Science Applications International Corporation, *Objective Assessment of Logistics in Iraq* (McLean, VA: SAIC, 2004), 69.

¹⁰⁸ Ibid.

¹⁰⁹ Kelly Tapp, “MTS Is Revolutionizing Logistics on the Move,” *Army Logistician* 36 (May-June, 2004), 4.

MTS operating in tandem may indeed provide the ITV that has been mandated for use. However, the automation systems and trained operators must be written into authorization documents. Operators must be trained at MOS producing schools with corresponding management training in NCO and officer training schools. Only if this is done with prescriptive doctrine and centralized ownership for the total force can warfighting commanders have any confidence that they will be able to harness this technology for application in combat.

Emerging Organizational Structures and Doctrine

The 12 August 2004 version of the Army white paper *Joint & Expeditionary Logistics for a Campaign Quality Army* incorporates the G4's focus areas and addresses reforms in how each of the tactical logistics functions will operate in a distribution-based versus a supply-based system. The white paper also offers a view of future organizational designs for scalable and tailorable CSS units. These units include the Theater Sustainment Command (TSC) with subordinate specialized brigades for Theater Opening and Theater Distribution (see Figure #3 in Appendix 2)¹¹⁰, as well as the reorganization of the current echeloned logistics force structures into future Brigade Unit of Action (UA), Unit of Employment (X), and Unit of Employment (Y) support units.¹¹¹

These proposed future organizations indicate that at the UEy level in the TSC, materiel and movement management are consolidated. However, no mention is made of a Distribution Management Center (DMC). The functions of the DMC as identified in the *TRADOC Pamphlet 525-77 Battlefield Distribution*, and depicted in *Field Manual 4-20 Quartermaster Principles* (see Figure #1) are not specifically assigned to either the TSC headquarters or the Theater Distribution Brigade. Resolving this and other questions about Battlefield Distribution doctrine given the

¹¹⁰ Headquarters, Department of the Army, *Joint & Expeditionary Logistics for a Campaign Quality Army* (Washington, D.C.: Headquarters Department of the Army, 2004), 12.

¹¹¹ *Ibid.*, 10.

Army's reorganization of CSS units will likely necessitate revisions of several Army doctrinal publications.

The Theater Distribution Brigade assumes a huge responsibility in the overall success of theater sustainment in this design. Merging materiel and movement management functions under a brigade commander proved successful for bulk petroleum distribution management in OIF. However, management of multiple, scarce commodities that rely on multiple organizations across the spectrum of tactical logistics functions and STAMIS stovepipes presents a recipe for inefficiency unless properly staffed and resourced. Under current Army Battlefield Distribution doctrine, TRADOC Pam 525-77, *Battlefield Distribution* and Army distribution based logistics system (DBLS) doctrine in FM 4-0 *Combat Service Support* and FM 4-20, *Quartermaster Principles* a Distribution Management Center (DMC) assists the commander (at each echelon, theater to division) in prioritizing and facilitating distribution of commodities to the customer. Will the DMC continue to be a viable doctrinal construct under this design? Will the DMC reside in the TSC HQs or a staff section in the Distribution Brigade? These questions must be answered with the ultimate goal of improved combat effectiveness and improved customer confidence in mind.

The TSC staff and Theater Distribution Brigade will require specially trained distribution managers and C4I systems that are not currently fully fielded and integrated to provide Army Total Asset Visibility (ATAV). There is not currently an Army battlefield distribution process owner designated for the operational / tactical level. Although the Army Quartermaster Center and School is currently working on establishing a Distribution Management Training Facility (DMTF), there is no formal, resident course to teach a holistic system of distribution management.¹¹² Although BCS3 is supposed to take the place of CSSCS in the ABCS, this

¹¹² Christine J. Meyers, "The Quartermaster Corps - Embracing Logistics Transformation," *The Quartermaster Professional Bulletin* (Spring 2003), http://www.quartermaster.army.mil/oqmg/Professional_Bulletin/2003/Spring03/The_QM_Corps_Embracing_Logistics_Transformation.htm; Internet; accessed 14 December 2004.

system is currently not taught in a formal program of instruction to dedicated distribution managers.

The Joint Expeditionary Logistics white paper assumes a doctrinal reform (distribution management) and logistics information connectivity that has not yet been effectively implemented in hi-intensity mobile ground combat operations. The statement in the white paper, "This consolidation of material and movement management is enabled by global communication connectivity, advances in logistics information systems and battle command systems."¹¹³ represents the kind of wishful thinking/planning that has created false expectations in the minds of customers. As demonstrated in the above unit AARs these expectations were not met during the initial combat phase of OIF. Having a viable, mobile, communications pipeline for logistics connectivity is simply an enabling condition for an end-to-end distribution based logistics system.

Emerging Concept - Operational Sense and Respond Logistics

The Army faces a potential diversion on the road to implementing effective battlefield distribution. The Office of the Secretary of Defense's Office of Force Transformation is developing an operating concept called Operational Sense and Respond Logistics (OS&RL). The origin of this concept can be directly traced to a Science and Application International Corporation (SAIC) Concept paper published in April 2003.¹¹⁴ The current DoD incarnation essentially posits the notion that any entity on the battlefield (given a joint, interagency, and multinational environment) may in the future serve as a provider or consumer of resources.¹¹⁵ Granted, this is a futures concept, however the fact that the Office of Force Transformation has stated that the OS&RL capability is central to net-centric warfare, the Army, as a member of a

¹¹³ Headquarters, Department of the Army, *Joint & Expeditionary Logistics for a Campaign Quality Army* (Washington, D.C.: Headquarters Department of the Army, 2004).

¹¹⁴ SAIC, *Sense and Response Logistics Capability in OIF*, 2003.

¹¹⁵ OSD, Office of Force Transformation, *Operational Sense and Respond Logistics: Co-evolution of an Adaptive Enterprise Capability, Concept Document (Short Version)*, 6 May 2004, 5.

joint warfighting team, must be conversant with the concept and adaptable to its possible future implementation. But first we must examine the concept and its enabling assumptions.

The OS&RL concept seeks to move well beyond the “iron-mountain” mass based approach to battlefield distribution. It even admits to shortcomings in the Just in Time distribution methodology and seeks to move beyond that concept:

“Just-in-Time logistics was an attempt to apply commercial practices to lean out the inventory and make the logistics system more efficient. Its prime metric was flow time or flow rate. Just-in-Time works well but creates a very brittle supply chain that is at much higher risk in a dynamic environment due to inflexibility, vulnerability to damage and destruction, and potential inability to service prioritized needs generated by a changing environment.”¹¹⁶

OS&RL seeks to change the prime metric from flow rate to speed / quality of effects.

The Sense and Respond logistics concept is summarized here:

Sense and Respond Logistics is a transformational network-centric concept that enables Joint effects-based operations and provides precise, agile support. Sense and Respond Logistics relies upon highly adaptive, self-synchronizing, and dynamic physical and functional processes. It predicts, anticipates, and coordinates actions that provide competitive advantage spanning the full range of military options across the strategic, operational and tactical levels of war. Sense and Respond Logistics promotes doctrinal and organizational transformation, and supports scalable coherence of command, control, operations, logistics, intelligence, surveillance and reconnaissance.

Implemented as a cross-service, cross-organizational capability, Sense and Respond Logistics provides an end-to-end, point-of-effect to source-of-support network of logistics resources and capabilities. Within Sense and Respond Logistics, every entity, whether military, government, or commercial, is both a potential consumer and a potential provider of logistics. It delivers flexibility, robustness, and scalability for Joint expeditionary warfare through adaptive, responsive, real-time, demand and support networks within U.S., allied, and coalition operations.¹¹⁷

OS&RL makes some wide-ranging assumptions and states required interdependencies for implementation in the 2010-2015 timeframe. These assumptions include: existence of necessary cognitive decision support algorithms, Blue Force Tracker exists for all operational, logistics, intelligence elements, and a common relevant logistics operational picture exists. These assumptions would be within the realm of possibility in the next 6-11 years. However, the

¹¹⁶ Ibid., 4.

¹¹⁷ Office of Force Transformation, *Operational Sense and Respond Logistics (Short Version)*, 5.

OS&RL concept goes further with its assumptions and breakthroughs required: Service and major ally logistics systems and information will be *interoperable and interconnected*, most military end-items and systems will be equipped to sense potential component failures or consumable status, autonomic logistics will be supported at factories, suppliers, manufacturers, contractors.¹¹⁸

The goals, attributes and assumptions of this Operational Sense and Respond Logistics (OS&RL) concept are stunning. In assessing the conceptual integrity and worth of this future concept it may be worthwhile to use the techniques for critiquing proposed military concepts found in John F. Schmitt's *A Practical Guide for Developing and Writing Military Concepts*. Mr. Schmitt authored several U.S. Marine Corps capstone doctrinal manuals to include *Ground Combat Operations*, *Expeditionary Operations*, *Planning*, and *Command and Control*. Schmitt states that in assessing proposed concepts, the description of a desired objective does not constitute a concept. Futures concepts, (which clearly applies to OS&RL) should be the subject of rigorous experimentation and debate.¹¹⁹ Schmitt assesses the development of military concepts by examining foundations, elements, and attributes. It appears that the OS&RL concept violates nearly every one of these dimensions.

Schmitt states that part of the foundation for development of a good concept is to resist the urge to develop a "revolutionary" concept for the sake of being revolutionary. Schmitt also identifies the fundamental need to address the domain of war for what it is and always has been. He states, "If a concept contradicts the consistent experience of war, the burden is on the concept to make its case."¹²⁰ OS&RL is predicated on every battlefield "agent" being both consumer and provider of logistics. This is contrary to the entire history of American warfare since the industrial age. Maybe the main foundational error of OS&RL is addressed in Schmitt's maxim

¹¹⁸ Ibid., 11-14.

¹¹⁹ John F. Schmitt, *A Practical Guide for Developing and Writing Military Concepts* (Alexandria, VA: SAIC Press, 2002), 3-4.

¹²⁰ Ibid., 13.

that concepts should not assume the existence of technologies that are unlikely within the future time horizon of the concept.¹²¹ The OS&RL concept is supposed to be operationalized in the 2010-2015 timeframe. It is unrealistic to the point of absurdity to assume that the joint community, let alone our interagency and multinational coalition partners will field the necessary technological enablers to be able to request, distribute, receive and account for supplies on the battlefield within the next 6-11 years.

The OS&RL concept seems to also fall short of Schmitt's key attributes for a good operating concept. Schmitt states that a concept should be written in language that establishes criteria for testing feasibility through experimentation. New concepts should avoid invention of new phrases and terminology. The new concept should contain straightforward, meaningful language that avoids elaborate phraseology.¹²² The OS&RL concept clearly fails to achieve this criteria. The central idea that every unit or agent on the battlefield will serve as provider or consumer of supplies may not win back the confidence of maneuver commanders who clearly saw the "Just-in-Time" logistics support of OIF as a definitive failure.¹²³

¹²¹ Ibid., 14.

¹²² Ibid., 21.

¹²³ See 3^d (U.S. Army) Infantry Division and V (U.S. Army) Corps OIF AARs referenced above.

CHAPTER 5 - CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The future forces of the US Army will need an effective distribution based logistics system that enables effective battlefield distribution, not simply efficient distribution management. The Army currently does not have such a system. The background and decision making causes for this current status has been examined in the previous chapters. In summary, the Army misinterpreted the underlying causes for ineffective distribution practices in the wake of Operation Desert Storm. The Army as an institution then embarked on a logistics reform effort that was overly focused on efficient business practices and did not empirically challenge the velocity management solution set in anticipation of real world battlefield conditions. Sole ownership, authority and responsibility for Army battlefield distribution has never been clearly established and executed. As a result, the stated objectives of Army battlefield distribution (improved combat effectiveness and improved customer confidence¹²⁴) were not realized during the initial major combat phase of Operation Iraqi Freedom.

One of the main failings in post Desert Storm reform efforts was acceptance of the defense intellectual community's hypothesis that efficient business practices would be effective on the battlefield. As General (U.S. Army, retired) Joseph Heiser wrote in his 1991 book *A Soldier Supporting Soldiers*, "We must accept the fact that even the most carefully conceived logistical contingency plans fail to prepare us for the chaotic environment that can occur in battle."¹²⁵ Major combat operations and subsequent stability operations in Iraq have demonstrated that in preparing for future operations efficient practices will be important but not at the expense of battlefield effectiveness. These two characteristics of a distribution-based system need not be mutually exclusive. To truly realize a working operational concept, battlefield

¹²⁴ Headquarters, Training and Doctrine Command, *Battlefield Distribution*, 7.

¹²⁵ Joseph Heiser, *A Soldier Supporting Soldiers* (Washington, D.C.: Center of Military History, 1991), 151.

distribution must be viewed as a holistic system that eliminates information barriers between Army STAMIS and joint C4I systems and bridges branch parochialism within the Army.

Another failing within our institution is the continuing second-class-citizen status of logisticians, their systems, and the order in which they are deployed to a theater of operations. In chapters 1 and 3, the negative operational impacts of sequencing logisticians late into the theater for both Operations Desert Storm and Iraqi Freedom were demonstrated. There appears to be a self-imposed binary choice between combat and logistical forces in the decision making process of operational commanders. A similar binary proposition seems to exist when choosing to invest between robust or austere logistical infrastructure and technologies. The business efficiencies paradigm pursued in the 1990s appears to have led us toward the wrong ends, both in serving the warfighter and building his/her confidence in sustainment systems. Army, joint community, and national security policy makers should not have to make such drastic, either-or decisions.

America and her Army can afford to be power minded. We currently have the economic wherewithal to construct an agile, precise force and ensure its' victory with sufficient mass and systems robustness. History has proven the effectiveness of American industrial capacity to ensure success in our warfighting efforts. Operation Iraqi Freedom seems to demonstrate we perhaps pursued too far the notion of deploying the smallest possible logistics footprint into a theater of operations. This mistaken notion was allowed to perpetuate during the 1990s as a means of reducing logistics personnel and materiel costs to fund development and acquisition of expensive weapons platforms. Those major platforms are not delivering food, fuel, or repair parts in Iraq today. We did not deploy an adequate logistics infrastructure in preparation for OIF in a timely manner to provide some redundancy in distribution capabilities and stockage. This point is especially relevant as we re-learn the security overhead costs of insurgency warfare in Iraq. As Napoleon's Iberian campaign demonstrated, long, insecure lines of communication harassed by insurgents consumed enough manpower (70,000 troops in 1811) to humble even the "God of

War”.¹²⁶ The US military similarly shed a good deal of blood in frustrating efforts to secure LOCs in Viet-Nam against insurgent forces.¹²⁷

As the Army relearns the overhead cost of security and risk to sustainment operations in an insurgent fight, we are also better able to judge what truly equates to sound investment strategy for military forces over the long term. Logistics as the bill-payer during the 1990s has clearly proven to be an unsound allocation of defense resources. Carter Magruder states in *Recurring Problems I Have Observed in Logistics*, “Cost Effectiveness is a valid consideration for military purposes only if the cost factor includes consideration not only of dollars but also of lives lost, lives blighted by wounds, and the effect of a national defeat.”¹²⁸ The institutional mind set that prompted General’s Schwarzkopf and Franks to deploy “just enough” logistics into theater after the combat forces also should finally be recognized as inherently risky at the operational level of campaign planning. As the Army reconsiders what precisely equates to adequate logistics footprint for future operations it is important to acknowledge that agility and adequate operational stocks are not mutually exclusive. Until significant reforms are made in the doctrine, education, technology and materiel that enable battlefield distribution, operational commanders must not risk their forces and campaigns to “save” on logistics infrastructure.

Are We There Yet?

Should the Army use the existing techniques, tactics and procedures in use in OIF as a baseline for revising the battlefield distribution doctrine? Should the current array of enablers and LCOP generation / ITV technology be accepted as the new standard? The answer to both of these questions must be no. The critical empirical test for battlefield distribution came and went during the force projection and major combat operations phases of OIF. Even if we were able to

¹²⁶ John L. Tone, *The Fatal Knot: The Guerilla War in Navarre and the Defeat of Napoleon in Spain* (Chapel Hill: The University of North Carolina Press, 1994), 4.

¹²⁷ Headquarters, Department of the Army, *Final Report, Vehicle Convoy Operations in the Republic of Vietnam* (U.S. Army Concept Team in Vietnam, 1971).

¹²⁸ Carter B. Magruder, *Recurring Problems as I Have Seen Them In Logistics* (Washington DC: Center of Military History, 1998).

effectively manage distribution and assure near 100% fidelity in total asset visibility before we conclude operations in Iraq our requirements for revising doctrine, improving education and equipping forces would not be fulfilled. The Army is still in the process of establishing the way ahead for battlefield distribution. Listed below are some recommendations that may assist in revising existing doctrine, establishing systemic ownership, enabling distribution managers and avoiding future setbacks or diversions on the path to effective battlefield distribution.

Recommendations

As the Army continues to transform while at war decision makers should consider fashioning doctrinal, training, and materiel solutions for ongoing battlefield distribution shortcomings by incorporating the following recommendations:

Place Emphasis on *Battlefield* Distribution.

Wishful commentators in the 1990s assumed it was reasonable to expect the same distribution efficiencies on the battlefield that were achieved in the U.S. by businesses such as Fed Ex or Wal-Mart. Given a cold-war linear battlefield perhaps some of these efficiencies could be demonstrated with enhanced information age technologies, however, Operation Iraqi Freedom helped disabuse all observers of the notion of the Wal-Mart paradox. It is now apparent that best business practice efficiencies in distribution management do not translate directly to an effective battlefield distribution system in combat. Congressman Ortiz during committee testimony mentioned in the introduction stated, "I am unconvinced about the analogies to civilian market-driven supply systems. The measure of a successful military operation is not peacetime efficiencies. It is wartime effectiveness. I am concerned that civilian models do not make

allowances for friction and fog on the battlefield.”¹²⁹ The Congressman seems to appreciate insights missed by some in the Army and defense intellectual community.

Given the lessons relearned in the crucible of counterinsurgent battle in Iraq, the Army must harden CSS forces throughout the total force to ensure increased lethality and survivability. This hardening must be reflected on unit authorization documents and basis of issue plans for spiral development and rapid equipment fielding items. In theater, ad-hoc improvements are insufficient to ensure that CSS forces are able to self protect and execute battlefield distribution. Qualitative materiel solutions should include up-armored vehicles and satellite based Global Positioning System (GPS) asset visibility systems like the movement tracking systems (MTS). The Army must also significantly increase the density of crew served weapons, vehicle ring mounts, FM communications, and night vision devices on CSS unit authorization documents. These improvements must be inclusive to ensure parity between active and reserve component forces. During Operation Desert Storm, 70% of the 22d Support Command under LTG Pagonis was composed of reserve units.¹³⁰ The 377th TSC that supported operational logistics for Operation Iraqi Freedom was a reserve component headquarters from Louisiana. In October 2004 Brigadier General Jim Chambers, commander of the 13th Corps Support Command stated over 90% of the personnel subordinate to his headquarters were reservists.¹³¹

Neither Operation Desert Shield nor the SASO operations in the Balkans presented a significant threat to logistics formations. When insurgents began to target supply convoys in Iraq the risk posed to operations and forces from lack of communications systems, hardened vehicles, and crew served weapons among CSS units were not quickly or effectively mitigated. Subsequent efforts between the DoD and U.S. industrial base did not correct the shortages as evidenced by the fact that as of 15 December 2004 only 10 % of medium tactical vehicles and

¹²⁹ Congress, House of Representatives, House Armed Services Committee, Subcommittee on Readiness, *Iraqi Freedom Lessons*, 108th Cong., 30 March 2004, 3.

¹³⁰ Pagonis, *Moving Mountains*, 101.

¹³¹ Brigadier General James Chambers, Fox News appearance, October 2004.

15% of heavy tactical vehicles had armor protection of any kind in the OIF theater.¹³² As a result of shortages of armor in Iraq, up-armored vehicles were not authorized for redeployment from theater, creating second and third order problems for units returning to CONUS and their subsequent preparations for follow-on missions.

Army Process Ownership

After Operation Desert Storm lessons learned from logistics were noted and never corrected.¹³³ In the case of Army battlefield distribution this may be due in part to a lack of holistic process ownership. Numerous agencies played in role in attempting to drive the Army's transformation toward a distribution based logistics system. These agencies included the Army G4, the Logistics Transformation Agency, the Combined Arms Services Support Command (CASCOM), and the Military Surface Deployment and Distribution Command (SDDC, formerly MTMC) component of USTRANSCOM. However, no single agency executed a holistic process-ownership role that focused on implementing an effective battlefield distribution operational concept. The time of decision has clearly come for assigning specifically defined roles and ensuring execution. The Army must precisely define ownership for revising battlefield distribution doctrine, educating distribution managers, organizing and fielding operational distribution units, rationalizing technological enablers and synthesizing them to support a single logistics C4I system.

CASCOM should serve as the lead agency for doctrinal development and professional military education of distribution managers. CASCOM should revise existing Army battlefield distribution doctrine with prescriptive language that incorporates existing technologies and procedures while recognizing the realities of the current operating environment. The existing doctrine (specifically *TRADOC Pam 525-77 Battlefield Distribution* and *Field Manual 100-10-1*

¹³² Jason Sherman, "No Full Speed Ahead on Armor – Contractors Say They Can Boost Production, But DoD Hasn't Asked," *Army Times*, 20 December 2004, 8-10.

¹³³ SAIC, *Objective Assessment of Logistics in Iraq*, 51.

Theater Distribution) dates from the 1990s before technological enablers, logistics communications infrastructure, and operational level distribution management had been sufficiently empirically challenged. The Distribution Management Training Facility (DMTF) initiative at the Army's Quartermaster Center and School must become a central component in the required doctrinal validation and professional development of distribution managers. This facility must be resourced in order to train distribution managers at the Officer, Warrant and Non-Commissioned Officer basic and advanced levels. CASCOM should also make an assessment of the requirement and feasibility of designating a distribution manager functional area for officers in addition to the existing functional area 90 (Multi-Functional Logistician). The requirement may exist to create a distribution warrant officer career field or modify the role of the existing mobility warrant officer.

These proposed recommendations for CASCOM to lead in the doctrinal and education reform nests with current efforts. The following goal is stated on CASCOM's distribution management site improvement team web-page: "The Army will ensure distribution management wartime theater distribution battlefield application through concepts such as distribution-based force projection with time definite delivery, through inclusion in doctrinal and training literature, and through instruction for officers and non-commissioned officers at TRADOC Schools."¹³⁴

The SDDC should serve as a force provider for operational distribution units to support future Theater Sustainment Command. This would present a new role but one that is in alignment with the SDDC's vision as stated in its' 2004 strategic plan: "To be the Warfighter's single surface deployment/distribution provider for adaptive and flexible solutions that deliver capability and sustainment on time."¹³⁵ The SDDC's expertise and role within TRANSCOM must be leveraged to horizontally nest with the roles and missions of the proposed Theater Opening

¹³⁴ Distribution Management web-site, http://www.cascom.army.mil/adm/PUBS/SIT_Guide.doc; Internet; accessed 1 December 2004.

¹³⁵ Headquarters, Military Surface Deployment and Distribution Command, *Strategic Plan 2004* (Fort Belvoir: SDDC, 2004).

and Theater Distribution Brigades under the Theater Sustainment Command.¹³⁶ These future operational battlefield distribution units should be under the command and control of SDDC. The unity of command benefits of controlling echelon above division (or BCT Unit of Action) long haul transportation assets would compliment the specialized functions of port opening and management, and establishing theater distribution infrastructure. Such a command and control relationship would also assist in providing trained and ready units to the TSC commander to support the joint force commander in future contingencies. Expertise from these units would help ensure that distribution management considerations are not afterthoughts in future campaign planning.

The Army must designate a single agency charged with rationalizing the numerous logistics information systems and designating uniform standards for development and procurement of existing systems.¹³⁷ Standardization is the first step in building a coherent information architecture within CSS organizations. This force wide architecture for technological enablers and military occupational specialty (MOS) trained operators and maintainers will justify allocations on unit authorization documents. Eventually, education and experience should relieve the vulnerability of reliance on contractors that has pervaded our ad hoc employment of civilian asset visibility systems.

C4I System

The Army must finally field a single decision support and execution-monitoring tool to enable distribution managers in each echelon's Distribution Management Center (DMC). The previous attempt to field the Combat Service Support Control System (CSSCS) as a component of the Army Battle Command System (ABCS) was ultimately a failure in part because it provided old data for command review and did not serve as a planning tool that could also query in-transit

¹³⁶ Headquarters, Department of the Army, *Joint & Expeditionary Logistics for a Campaign Quality Army* (Washington, D.C.: Headquarters, Department of the Army, 2004).

¹³⁷ Science Applications International Corporation, *Objective Assessment of Logistics in Iraq* (McLean, VA: SAIC, 2004), 73.

and total asset visibility databases. CSSCS could not enable predictive materiel management at the operational level and direct execution of battlefield distribution. The Army is currently using Battle Command Sustainment Support System (BCS3) as one element of a system to generate a logistics common operating picture.¹³⁸ A real time LCOP is a fundamental component for distribution management, but until the situation monitoring tool can also serve the distribution manager as a means of planning, directing and monitoring execution for both commodity and transportation management, the vision of battlefield distribution will not be realized.

The single C4I system must reside in and serve as the engine for an integral DMC located at each sustainment unit echelon from TSC down to Division or BCT Unit of Action. The system must be rugged and agile enough, with satellite connectivity, to support high mobility combat operations. The universe of technological enablers, Army STAMIS, and joint information networks like RFAIT, DTRACS, MTS, ILAP, SARSS, SAMS, SAAS-MOD, TC-AIMSII, and GTN must populate the database in support of the C4I system. The enablers should not pose an ad hoc constellation of data streams for the distribution manager to sort through based on personal experience, unit training, or contractor support agreement. In preparation for OIF, U.S. Army Europe determined that there are approximately forty distinct logistics information systems that a distribution manager at the operational level must query and monitor in order to be proficient at theater logistics.¹³⁹ The current architectures required to maintain both joint in-transit visibility and the current LCOP architecture is depicted in Appendix 1 at figure #3.

Avoid the Roots of Future Failure

Operational Sense and Respond Logistics may prove to be the next “JIT-logistics” mirage and should be rejected in its current form. In chapter 4 we demonstrated that the OS&RL concept makes critical compatibility assumptions about the capabilities of interagency and multinational

¹³⁸ Ibid., 72.

¹³⁹ Ibid., 63.

partners.¹⁴⁰ These assumptions are extremely unrealistic and equate to wishful thinking. The Army should continue to refine its' LCOP generator and expand it to establish a single C4I solution as identified above. This decision support and execution monitoring tool will enable properly trained distribution managers to support the fielded joint fighting force in accordance with Army wartime executive agency responsibilities (WEAR). Support to agencies outside the Department of Defense will continue to require prior coordination and development of standing agreements.

Another potential pitfall to be avoided is mirroring today's solutions onto tomorrow's battlefield. The Army must not shape the force or revise doctrine in order to fight "Gulf War III". As we revise battlefield distribution doctrine we must ensure it is applicable to small-scale contingencies. Max Boot in *Savage Wars of Peace* ably demonstrated that large-scale wars are the historical exception in America's conflicts.¹⁴¹ This realization is also critical as we reshape our logistics sustainment structure. The expertise and systems infrastructure required to execute battlefield distribution must not be resident at only echelons above corps headquarters (Or at UEx and UEy headquarters, given the new parlance). As increased flexibility in strategic deployment goals are met, the ability to conduct operational and tactical battlefield distribution must reside at lower echelons to include the Brigade Combat Team Unit of Action (UA). This requirement necessitates a scalable and modular "plug" element from both the proposed Theater Opening and Theater Distribution Brigades (discussed in chapter 4). These plugs must be able to replicate the kind of joint, strategic to operational information / asset visibility bridge that the CENTCOM Deployment and Distribution Operations Cell (CDDOC) provided in OIF.

In closing, it becomes apparent with the gift of perfect hindsight that the battlefield distribution challenges and failures the Army faced during the initial combat phase of Operation Iraqi Freedom were wholly predictable; they were in fact almost logical. The conclusions and

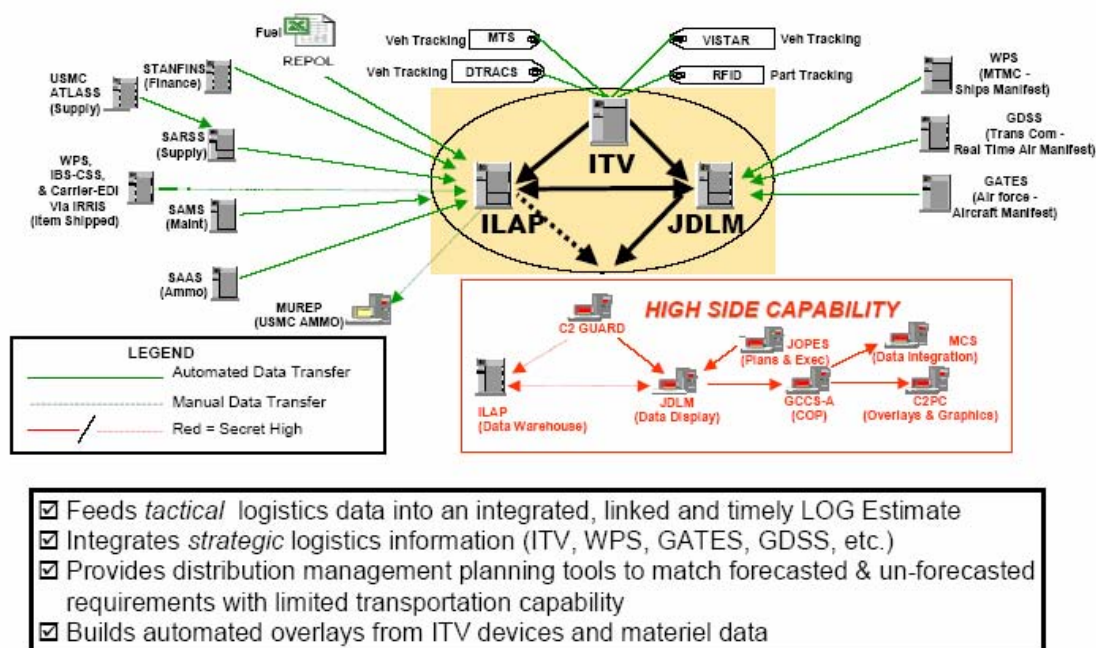
¹⁴⁰ OSD, Office of Force Transformation, *Operational Sense and Respond Logistics*, 11-14.

¹⁴¹ Max Boot, *The Savage Wars of Peace: Small Wars and the Rise of American Power* (New York: Basic Books, 2002).

recommendations above will assist in the long term with removing some of the root causes of those challenges and failures. However, as the inevitable urgent crises associated with transforming the Army while at war arise, it is critical that the Army focuses on the fundamentally important task of constructing and resourcing sound battlefield distribution doctrine, organizations and managers. Without such doctrine and organizations the next war will present us with similar battlefield distribution challenges and may cause outcomes far more costly and regrettable than Congressional hearings.

APPENDIX 1 – THEATER DISTRIBUTION C3 ARCHITECTURE

Source: Assessment of Logistics Automation in Support of OIF. Distribution Management Board of Directors Meeting, 6 Aug 03



CFLCC, Log Auto, OIF Support

DM BOD, 06 AUG 03

Figure 2. BCS3 / LCOP Architecture

APPENDIX 2 – PROPOSED THEATER SUSTAINMENT COMMAND DISTRIBUTION ORGANIZATIONS

Source: Army Joint Expeditionary Logistics White Paper, 12 Aug 04

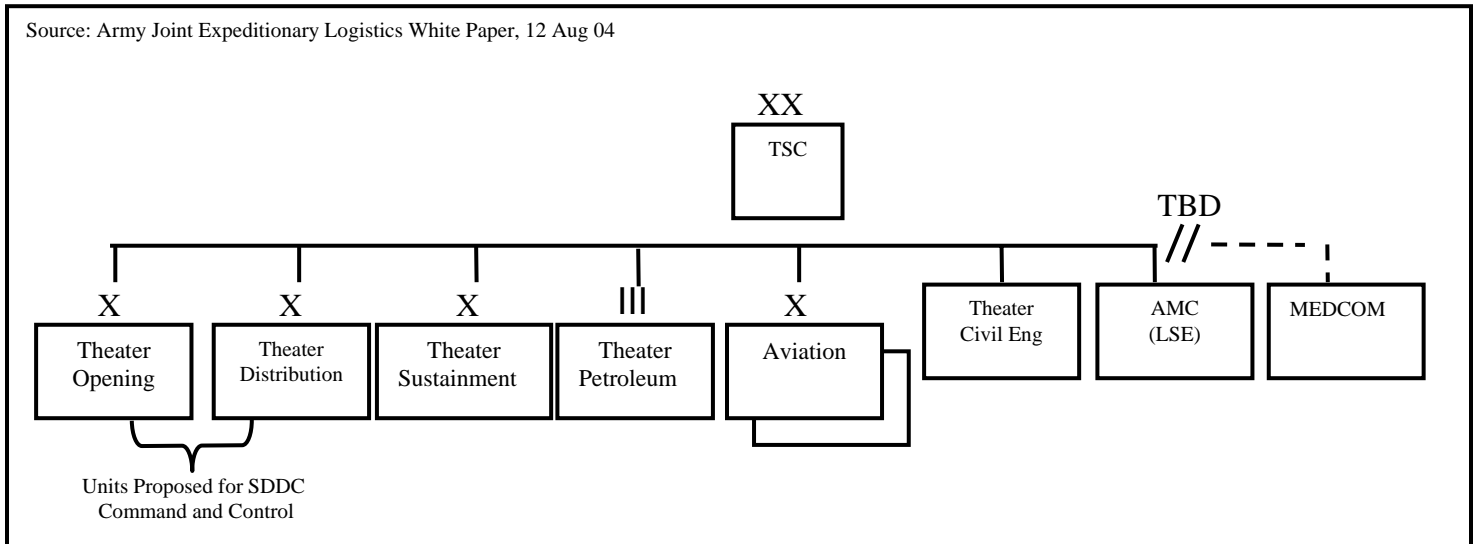


Figure 3. Theater Sustainment Command Distribution Organizations

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